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Original Articles

The Prevention of Endemic Goitre

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The high incidence of simple (endemic) goitre among schoolchildren is just beginning to be generally recognized. The work of Kimball and Marine in Akron, Ohio, initiated a more careful study and survey of goitre in this city, located as it is in the heart of the great goitre belt, than would perhaps be usually undertaken in routine school medical inspection. An effort was made to find a simple and practical means of educating the public to realize the prevalence of simple goitre and the simplicity of its prevention.

The subject was brought to the attention of the community during Health Week in the schools, by lectures, slides, and conferences. Letters were sent to the parents explaining goitre, its cause, ill effects, and the means proposed to combat it, asking them to sign permit slips if they were willing to have their children take the outlined course of school treatment. About half of the children in the grades (boys and girls), numbering around four thousand children, and the same proportion of high school girls elected to take the treatment. The pupils of three of the grade schools and the high-school girls were chosen for detailed study as follows: Measurements over the largest part of the neck or over the greatest circumference of the gland were recorded for each child with his or her age and the degree of enlargement noted—X being a gland just definitely palpable and visible, XX being a moderately enlarged gland, and XXX being a very large gland. Then each child taking the course of treatment was given a single iodostarine chocolate tablet, containing 10 milligrammes of iodine in the form of an organic iodide, once a week; the tablets were administered to the pupils by their teachers, under medical direction. Iodine in any form is effective as far as the iodine goes, but for exact dosage, slow even absorption, and prolonged administration to children, this palatable, stable preparation served the purpose best.

No cases of iodism, no untoward circulatory nor nervous effects were noted through the entire course of treatment. The children, stimulated by talks on the physiology and importance of the thyroid gland, became intelligently and actively interested, carrying their information and enthusiasm to the home, thus bringing the message where it was most needed.

The incidence of goitre in these three grade schools and the high school and its degrees as shown by the measurements was as follows:

TABLE I.

CASES.

	Degree			Totals	
Schools.	X	XX	XXX	No.	Per cent.
No. 1 }	261	56	2	319	87
No. 2 } Grade	258	63	10	331	82
No. 3 }	74	3	0	77	51
High School	261	108	12	391	85
Totals	854	230	24	1108	76

After three months, the end of the school year, measurements were again taken and recorded and a study made of the results. The record of pupils who took the treatment is shown in the following table:

TABLE II.

Schools.	No.	Decreased.	Per cent.	Unaltered.	Per cent.	Increased.	Per cent.
No. 1	163	146	89	13	8	3	1
No. 2	155	107	69	43	27	5	3
No. 3	100	92	92	4	4	4	4
High School	143	139	96	4	2	0	0
Totals	561	484	86	64	10	12	2

The record of the pupils who did not take the treatment is shown in the following table:

TABLE III.

Schools.	No.	Decreased.	Per cent.	Unaltered.	Per cent.	Increased.	Per cent.
No. 1	227	45	19	75	33	85	37
No. 2	197	28	14	69	34	99	50
No. 3	52	14	27	14	27	27	51
High School	167	32	18	95	57	33	39
Totals	643	119	19	253	38	244	38

As seen in Table II, 86 per cent of the children taking iodine and having goitres showed a definite reduction in size, this reduction varying from ½ to 1¼ inches, while only 2 per cent showed an increase in the size of the gland, this percentage being probably accounted for by insufficient dosage. Considering the short periods of time that the gland was under the influence of a proper iodine metabolism, the response was quite definite. As has been observed before, adenomas respond much more reluctantly than simple types of goitre.

Of those not taking iodine 38 per cent showed an *increase* in the gland measurements. The 19 per cent decrease found among those not taking iodine in any form is partly accounted for in the physiological variations of the gland and the many extraneous influences affecting thyroid stability, such as better general health, let up on nervous strain, etc.

As has been recently noted in other communities, the proportion of boys having goitre is not so small as formerly supposed. The analysis in Table IV shows the incidence to be almost equal in both sexes. Goitre in boys is usually congenital in type and physiologically more sure to regress after the age of puberty. There was quite a definite response to iodine medication, however, in the case of the boys also.

The incidence of simple goitre in children reaches its peak at about the fourteenth year, dropping off rather abruptly after fifteen years of age (Table V). It and its discoördinating effects on the glandular balance of childhood is quite evidently a part of the strain and reorganization of puberty, making its control and prevention even more urgently imperative.

While this study was undertaken this year primarily as an educative measure, its duration being limited, and while the existence of and the response to already formed goitres is its most vivid lesson, the problem is much more fundamentally a preventive one and should be carried out

TABLE IV.

	Male.			Female.			Totals.	
School.	X	XX	XXX	X	XX	XXX	Male.	Female.
No. 1	131	20	0	130	36	2	151	168
No. 2	138	16	5	120	47	5	159	172
No. 3	27	1	0	47	2	0	28	49
High School				261	108	12		381
Totals	296	37	5	297	85	7	338	389

in the schools to include *all* children between the ages of eight and sixteen, irrespective of the existence or non-existence of any thyroid enlargement.

TABLE V.

Age.	Degree.			
	X	XX	XXX	Total.
4	0	0	0	0
5	1	1	0	2
6	31	3	0	34
7	69	6	0	75
8	83	11	0	94
9	95	13	0	108
10	68	14	0	72
11	92	11	2	105
12	67	21	2	90
13	90	27	5	122
14	110	50	8	168
15	87	37	4	120
16	39	15	2	56
17	18	7	1	26
18	2	3	0	5
19	1	0	0	1

The work of Kimball and Marine in this country and the results of Klinger's work in Switzerland, where this type of preventive therapy is compulsory in the schools, and where the incidence of goitre has been reduced from 87 per cent to 13 per cent in three years, substantiate this and argue most conclusively for it.

The interest aroused in the public, the safety and scientific precision of the methods used, and the tangible evident results obtained make it an especially attractive and valuable field of preventive medicine which can be carried on without question most effectively in the schools as a public health measure backed and supplemented by the medical profession. The work is spreading and should spread, and with the increased information obtained from workers, should become very simple and routine in all goitre districts. It is the hope of this department to incorporate the scheme into the school system as a regular routine part of the year's health programme.

A Simple, Bloodless, Ambulant Hemorrhoid Operation

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Operation is performed under local anesthesia. A half-hour prior to operation from one-quarter to one-third grain of morphine sulphate is given by mouth, along with atropine grain 1/100 and strychnine grain 1/30.

Bowels should have been emptied prior to operation. Operative field is now cleansed with soap and water, followed by potassium permanganate solution, about 1 to 3000; this largely eliminates fecal odor from field. Internal hemorrhoids are temporarily converted into external by application of a suction cup with mild suction over anus. An appropriate spot of rectal mucosa is first swabbed with 10-per-cent cocaine, and through this preliminary anesthetized area the entire operative field anesthetized in a painless manner by successive injections of 2-per-cent novocaine.

Individual hemorrhoidal masses are next taken up one by one and held in the grasp of an appropriate sized suction tube of glass; this holds the hemorrhoid out prominently and also serves as an insulated forceps, without the lacerating effect of surgical seizing forceps.

An electro-coagulation needle in an insulated handle is now brought into play, using the direct bipolar D'Arsonval high-frequency electric current. The indifferent electrode, usually about a 5-inch by 6-inch plate of diathermy metal, is strapped over one leg or over the abdomen, with a cloth wet in saline solution between skin and metal plate. The electro-coagulation needle in insulated handle is now connected by flexible insulated wiring to active pole, and the needle carried through base of hemorrhoid under edges of suction tube holding hemorrhoid. With foot-switch usage, enough current is sent through the

needle to coagulate but not to carbonize hemorrhoidal tissue; this process is repeated with the needle over base of pile until the entire base is electro-coagulated.

If there are several pile masses to be removed, the base of each one is electro-coagulated in the same manner as with the first. If care is taken to handle the hemorrhoid gently, the entire procedure is painless, only enough current being used to coagulate the tissues. Pain following the procedure would be indicative of some sparking and some degree of carbonization on the active electrode, which is to be avoided.

This completes the operation, when each hemorrhoid to be removed has been thus treated. Coagulation of its base destroys blood and lymphatic supply to the hemorrhoid proper, and in a few days the hemorrhoid simply comes away in a painless and bloodless manner, skin and rectal mucosa involved rapidly healing over the operated area.

The field of operation should be kept lubricated with some bland, soothing ointment for a few days, and any tendency toward constipation warded off by appropriate measures. Otherwise the patient is free to go about his usual avocation.

Advantages of the method are that it is ambulatory, painless, rapid, and involves no cutting or bleeding. These are the factors which keep hundreds of hemorrhoid sufferers from consultation with their doctors year after year; or until the condition becomes so aggravated as to be disabling. No claim for originality is made, of course, for the successive steps in this procedure.

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Notes on Modern Treatment

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I. The Treatment of Infantile Convulsions.

First of all the physician should ascertain the cause of the convulsions, the most common factors being indigestion, constipation, helminthiasis, acute or chronic gastroenteritis, rickets, acute febrile processes, affections of the meninges and myeloencephalitis, albuminuria, cerebral syphilis, whooping-cough, foreign bodies in the ear, nose or bladder, drug intoxication—alcohol, carbolic acid, iodoform, potassium chlorate, etc.—and, lastly, sunstroke.

At the time the convulsion occurs the clothing should be removed, the child placed in a large, well-ventilated room, and as soon as it has recovered a cleansing enema of 150 cc soap-suds, boiled water or salt solution, to which 200 cc glycerin have been added, is given. Then a tepid bath with cold affusions on the head is advisable.

If the convulsive paroxysm is violent a little ether should be inhaled and a mustard bath given.

During the intervals of the convulsive seizures the enemata and tepid (97° F.) baths of ten minutes' duration, with cold compresses on the head, should be given every four hours or so.

Potassium bromide in potion should also be ordered in the dose of 5 to 12 grains in infants and 15 to 30 grains in children from one to three years old. Chloral may be preferred by some, given alone or combined with the potassium salt, but chloral must never be exhibited when there is cyanosis with asphyxia.

℞ Potassii bromidi, gr. xv;
Chloralis hydrat., gr. iij;
Syr. simplicis, ℥ij.

M. S.: A teaspoonful every half-hour.

Or,

℞ Potassii bromidi, ℥ij;
Tinct. valerian, ℥ij;
Aq. dest., q. s. ℥viij.

M. S.: Three teaspoonfuls daily for a child of two years, or three dessertspoonfuls for children from two to five years.

If necessary, these antispasmodics may be given per rectum.

Should the convulsions persist an ice-bag should be applied to the head and the child enveloped in a cold damp sheet, especially if there is pyrexia.

In case of cyanosis of the face, a meningoencephalitis, or uremia — post-scarlatinal albuminuria—apply leeches behind the ears and resort to lumbar puncture when there is hypertension of the cerebrospinal fluid.

II. The Treatment of Asthma.

When a subject is seen in an attack of dyspnea the physician should first of all ascertain if it is really asthma, for it may be dyspnea due to uremia, acute pulmonary edema, or acute cardiac insufficiency. Therefore, when the diagnosis has been made a subcutaneous injection of 5 to 10 minims of the 1:1000 solution of adrenalin is to be given. The paroxysm will usually cease in ten or fifteen minutes. The injection may be repeated once in twenty-four hours. Adrenalin is a tonic of the sympathetic, and by its stimulating effect on this nerve, which is an antagonist to the vagus, the bronchial spasm is relieved. Much has been said in respect to the short duration of the effect of adrenalin—six to twelve hours—as well as its absolute ineffectiveness in some subjects and its congestive effect on the lung.

Hallion has attempted to correct this by combining it with the extract of hypophysis as follows:

℞ Sol. adrenalin, 1:1000, gtt. xv;
Pituitrin, minim v;
Salt solution, minim xv.

For an injection.

This same observer insists upon the sedative innocuousness of adrenalin, and he states that he has given ten milligrammes in twenty-four hours without any serious trouble ensuing and without increasing the blood-pressure.

The signs of intolerance, which, for that matter, are without gravity, are a slight degree of malaise, vertigo, palpitation, slight tremor or chills—briefly a certain degree of fleeting hypermotivity which is less marked when the patient is lying down.

Besides adrenalin, belladonna should be recalled. In prolonged cases of asthma an injection of 1/150 grain of atropine sulphate finds its indications.

Codeine is effective in the dose of one-half to one grain subcutaneously during a paroxysm, and camphorated oil may be advantageously combined with it.

Benzyl benzoate—a sedative and hypotensor—has also been exhibited in the form of a 20-per-cent alcoholic solution given at the dose of twenty to thirty drops in sweetened water three or four times daily. It is not very efficient.

Should these drugs fail to give the desired effect morphine or pantopon is to be resorted to.

Adrenalin given per os or per rectum is of little use, but the same cannot be said of nasal or tracheal pulverizations, whose effect is very appreciable although of short duration.

℞ Stovaine, gr. ij;
Sol. adrenalin, 1:1000, minim vij;
Physiological NaCl solution, ℥ij.

For nasal spray.

When the paroxysm has subsided an aperient should be given with absolute rest in bed and water diet for two or three days, after which another dose of aperient is given if the patient's condition warrants it. If the heart shows signs of failure, injections of strychnine, camphorated oil or caffeine are indicated. Later on medication will be ordered according to the given case, such as Dover's powder, the iodides, potassium bromide, etc.

But above all, a *strict* mode of life must be observed, comprising rest of the nervous system, respiratory gymnastics, certain sports which stimulate the respiratory functions and ventilate the lungs, hot hydrotherapy and thermal cures.

In elderly subjects massage and mechanotherapy are useful. It goes without saying that the patient should guard against all substances to which he may be sensitized, a practically impossible recommendation if this substance or substances are unknown.

And it is just this very ignorance of the anaphylactizing substance that prevents a specific antianaphylactic treatment directed

to desensitizing the organism. It is true that certain chemical compounds have been recognized as preventive agents of shock, such as calcium chloride, sodium hyposulphite and the peptones, but as this interesting subject is still under study I will not enter into it, but it can be said that the results obtained so far as asthma is concerned are by no means conclusive. The protection obtained is often but fleeting and relapses are the rule. Pollen vaccine has been essayed in hay-fever, animal vaccines in cases of sensitization to an animal protein, bacterial vaccines for anaphylaxis from a microbic protein, etc.

Rousseau has utilized the anti-influenzal vaccines of the Pasteur Institute, which contain the pneumococcus, streptococcus, and Pfeiffer's bacillus, and he obtained a decrease of the violence and intensity of the paroxysms. Galup has been less successful in this respect.

Danysz has employed the entero-antigens having bacterial bodies as a basis, taken from the intestinal flora. Autoserotherapy, autohematotherapy and peptonotherapy are laboratory procedures which as yet have not been essayed in practice. The difficulty in applying such treatments is clear.

The hydromineral treatment of asthma has received much attention from French physicians. Mont-Dore has been regarded as highly effective. The waters are employed internally, by inhalation and baths. Occasionally hydrotherapy in the form of nasal irrigation or liquid or gaseous douches is added to the treatment. To the action of the waters, the purity of the atmosphere and climatic action—an altitude of 1100 meters—must also be taken into consideration.

The immediate effects of the thermal cure are variable. Some patients arriving in an attack are rapidly relieved (about 10 per cent), while others coming during an interval of the attacks (about 15 per cent) develop an attack from the treatment, and there are no means by which this attack can be foreseen, hence avoided. Occasionally some patients will develop attacks six weeks or two months after taking the cure, or they may present a rather pronounced state of depression, and it is only later on that definite results manifest themselves.

The forms of asthma suitable for treatment at Mont-Dore are the oculonasal and nasothoracic forms of hay-fever and dry and moist asthma. Also cases of asthma coinciding with objective lesions of the respiratory tract—polypoid nasal lesions, various forms of rhinitis, emphysema, and tuberculosis—and asthma developing in a mild acquired or hereditary hepatic state with hepatalgia, and with or without hepatomegalia, are, according to Moncorgé, beneficially influenced. The hepatic disturbances referred to are generally dependent upon tuberculosis of the right apex.

I would add that a cure at Mont-Dore is contraindicated in Bright's disease, cardiac affections, and arteriosclerosis.

III. The Treatment of Varicose Veins and Complications.

Venous ectasis is a very frequent and often distressing condition with which the physician has to deal, and in every case the hygiene is of utmost importance. Standing still for any length of time or walking long distances should be forbidden. The patient should lie down as much as possible and keep the limbs clean by daily tepid baths to which a little alcohol or lead lotion is added. Constipation should be attended to.

Walking is the best exercise in cases of venous ectasis on account of the beneficial influence that it exercises by the intermediary of the muscular system on the venous circulation and the reflex vasomotor functions. As a real method of treatment the physician should advise regular progressive and rapid walking—110 to 120 steps to the minute—with periods of rest in the recumbent position as soon as the subject begins to feel tired.

The bicycle and golf may also be allowed, with the proviso that neither sport shall be overdone.

All exercises in which walking is reduced to a minimum are to be prohibited or when they are accompanied by long intervals of standing or sitting with the lower limbs hanging—equitation.

Gentle massage of the lower limbs is advisable, but the séances must not be too long. Hydrotherapy in the form of baths at a temperature of 94° to 96° F. taken in the morning when arising is also to be recommended.

Compression by means of a Velpeau bandage should always be employed and preferred to an elastic stocking, but should the latter be better suited to the patient it should always be made to measure by a first-class maker and always extend up to the mid-thigh.

Whatever type of bandage be worn, it should always be applied when the patient arises and removed at night after the patient is in bed. If an elastic bandage be used care must be taken to begin by rolling it at the root of the toes and carry it up above the knee, never allowing it to be tighter above than below.

Any kind of bandage must be proscribed if there are any cutaneous lesions or an attack of acute phlebitis.

Internally fluid extract of hamamelis—4 to 5 cc daily in three doses—may be prescribed with advantage, or fluid extract of hydrastis, 1 cc to 3 cc daily.

When regardless of symptomatic treatment no amelioration ensues, and the venous process is accompanied by pain, eczema, cutaneous ulceration and menacing rupture, and in case of aggravation in spite of medical treatment, surgical treatment must be resorted to.

In my opinion the only proper procedure is total resection of the saphenous vein, completed by excision as far as possible of the perforating veins, which gives communication between the superficial and deep venous systems of the limb.

After operation the results obtained must be maintained by medical measures employed in symptomatic treatment.

In varicose phlebitis without suppuration absolute immobilization with the limb raised in a wire splint well padded with cotton must be carried out for four to six weeks.

If there is suppuration, absolute immobility and incision of the abscesses lying along the vein, with the application of suitable antiseptic dressings.

Rupture of the ectasis, when this is interstitial, requires absolute rest of the limb and a slightly compressive bandage. If the rupture is external the same treatment should be resorted to, but if the bleeding is not controlled ligature of the vein above and below the rupture will be required.

The subject of varicose ulcer is so large that space forbids its discussion here, and also because the lesion in question is in the domain of surgery; hence it is of less interest to the general practitioner, for whom these notes are especially intended.

IV. The Treatment of Uncomplicated Gastric Ulcer.

There are two conditions to be considered. On the one hand there is the case of recent ulcer or at least an ulcer whose diagnosis has just been made, and which, consequently, has not been treated, while on the other hand there is the case of a more or less long-standing lesion which, already diagnosed and treated, has been stubborn to medical care or has presented relapses after more or less long periods of quiet.

In reality there is no medicament for gastric ulcer, but a treatment which will only be effective on the condition that it is carried out in every detail for a sufficiently long time under the daily supervision of the physician. In order to realize the treatment the complete collaboration of the patient must be obtained. He should be made to understand that he has an ulcer of the stomach which requires rest in bed just like an ulcer of the leg, and that the treatment will take time.

All this means complete rest in bed without getting up even to go to stool. At the same time intellectual rest is essential, and this is obtained by isolating the subject in a partially darkened room, both reading and writing being prohibited, at least during the first days of treatment.

It is far better practice to postpone treatment for a few days or weeks than to forego the realization of this first essential condition.

Rest in bed must be for at least a month or six weeks. The clinical symptoms and

especially the cessation of pain will be the criteria by which permission may be given to the patient to pass a few hours on a lounge or easy chair, but in no circumstances should this be allowed before the end of the first month.

This absolute rest comprises, be it understood, the functional rest of the stomach. This is obtained in three different degrees, either by absolute fast, hydration diet, or milk diet. In the majority of cases absolute fast is to be prescribed during the first phase of treatment lasting three, five or even eight days. The water necessary for the proper functionating of the kidneys and to allay thirst is to be introduced in the form of three enemata daily of 500 cc boiled water to which a few drops of tincture of opium have been added.

Murphy's rectal drop method is likewise useful in some cases. One may also give two daily injections of glucose solution, either of the following formulæ being suitable:

℞ Sodii chloridi, ʒj;
Glucose (pure crystallized), ℥j;
Aq. dest., Oij.

Dissolve at ordinary temperature and then sterilize before using.

℞ Glucose (pure), ʒvj;
White flour, ʒj;
Aquæ dest., q. s. ad ℥vj.

For an enema.

℞ Glucose (pure), ℥iij;
Sodii bicarb., ℥j;
Aquæ dest., q. s. ad Oij.

It is essential to maintain the minimum amount of twenty-four-hour urine at 500 cc to 600 cc.

If the starvation diet is to be continued for a long time two to four nutritive enemata are to be given in twenty-four hours, but it must be recalled that occasionally they are tolerated with difficulty by the patient.

In the second phase of treatment one begins by allowing the patient to take half an ounce of boiled water every two hours, and after a couple of days a milk diet is begun. The milk should be absolutely pure and all necessary care should be taken to keep it fresh during the day it is being consumed. It may be given raw if the patient so prefers, and taken cold or warm, pure or diluted with sugar-water, according to the patient's taste.

One pint daily is the quantity of milk to begin with, and then this is progressively increased, but without haste, to one quart, three pints, and two quarts, the latter amount being the limit excepting in unusual circumstances. It should be divided into ten feedings given every hour and a half and taken very slowly. The amount of water given per rectum or nutritive enemata are slowly decreased, and when two quarts of milk are ingested daily all other means of feeding and the introduction of water are stopped.

Usually it is only at the end of the first month of treatment that one may begin to vary the regimen, and then only upon the condition that all gastric pain has ceased and that there are no hemorrhages, concealed or otherwise. For this purpose the stools should be regularly examined by the guaiacum test.

The variations in diet may be begun even earlier if all the necessary conditions are fulfilled, or if the patient does not tolerate milk well. But milk should form the basis of the regimen, with the addition of farinaceous soups, macaroni, milk, rice, and various creams and soft custard.

Later on, purée of potato, stewed fruit passed through a sieve, raw bananas and macaroni, also fresh cream cheese.

All this must be done progressively, prudently, immediately eliminating any article of food that seems to awaken the slightest gastric symptoms. The aliments should be divided into four or five little meals during the day, and with them terminates the period of rest in bed.

Other than rest in bed and diet, the physician should be cautious in the use of drugs or other therapeutical measures. However, some observers advise the use of external applications over the epigastric region, such as a mustard poultice for three to five minutes once a day or hot moist dressings.

As a topical application to the ulcer the salts of bismuth and kaolin are to be recommended. According to the case from 3

drachms to 1 ounce of kaolin mixed in a glass of water is to be given in two doses at fifteen minutes' interval when the patient awakes. This should be continued for about a month unless the patient does not tolerate it, which is most uncommon. Belladonna and opium may be exhibited for controlling spasmodic or painful phenomena, as well as for decreasing the gastric secretion.

Three times daily the lips, gums and teeth are to be cleansed. The anal and rectal mucosa should be watched while rectal feeding is resorted to as proctitis sometimes ensues. Constipation, which is frequent, is to be controlled by glycerin suppositories, injections of castor oil, and mild aperients such as magnesia or the spiced syrup of rhubarb. If the treatment has weakened the patient cardiac and other tonics are to be prescribed.

By the above treatment a cure of the ulcer should be obtained in from five to seven weeks, but recurrence is to be avoided. Rest should be progressively given up and all violent exercise proscribed. The diet must be still strictly supervised, milk forming the basis. Finally, boiled fish, roasted or grilled meats, at first finely hashed, may be added to the régime, but for months or even years the patient should abstain from any food which is not perfect in quality and perfectly cooked. Also any article of food which causes the slightest gastric symptom must be discarded from the diet list. Salt, in particular, must be taken in small amount only.

Some cases of chronic ulcer are stubborn and relapse. In this condition surgical treatment is indicated. As I have stated elsewhere,* it may not be good judgment to resort to it at once and medical treatment as above outlined should be essayed, but the chances are that medical measures will fail. The menace becomes great when serious gastric hemorrhages or continued concealed loss of blood—examination of the feces—ensue, and then there is always danger of malignant transformation of the ulcer when the lesion is of long standing, no matter what may be the age of the patient.

Thermo-Saline CO_2 Baths in the Light of Modern Research

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Since the days when balneological therapeutics, in accordance with the fundamental work of Beneke and August[1] and Theodor[2] Schott were first empirically employed in the treatment of diseases of the heart, much important research work has been done, for the purpose of obtaining, by new scientific methods, more exact information as to the means by which carbonic acid baths produce their effects, with a view to practical results for use in treatment.

The manner in which carbonic acid baths act, which is to this day far from being exhaustively investigated, is extraordinarily complicated. It may at the present time be taken for granted that these baths have quite specific effects which other baths either have not or have in a less degree. By means of Strasburger's[3] experiments, the behavior of the blood-pressure in carbonic acid baths has been systematically analyzed, and it has been shown that these baths stimulate the heart to greater effort, and thereby produce an increase in cardiac output, a property which plain water baths do not possess. On the ground of his experiments, Strasburger has come to the following conclusion: That brine baths containing carbonic acid exercise the heart while preserving its

*Cumston and Patny: The Surgical Treatment of Non-Malignant Affections of the Stomach. Lippincott, Philadelphia, 1921.

strength and facilitating its work. In the year 1905 he proved that such baths dilate the blood-vessels. Then O. Mueller[4] and his pupils, as a result of their researches, explained the action of the baths as due only to their temperature, a specific effect of the carbonic acid being denied by them. This opinion, especially with regard to natural carbonic acid baths, may to-day be regarded as disproved and corrected. Systematic blood-pressure research made by Schott at the Nauheim springs, which are rich in carbonic acid and in salt, showed that in the case of healthy subjects an initial rise of the blood-pressure in the cool bath was followed by a fall below the original point; the effect of plain water and artificial carbonic acid baths with regard to the dilatation of the blood-vessels is certainly quite different. By means of plethysmographical experiments, most carefully carried out, Hirschfeld[5] and Meyer[6] found an increase in the volume of the arm in a carbonic acid bath; that is to say, a dilatation of the blood-vessels.

The experiments in retardation of the pulse which Isaac[7] carried out with Frank's extremely sensitive, optically registering sphygmograph, in natural carbonic acid baths at Nauheim, showed an increase in the retardation of the pulse in the art. radialis in comparison with the art. carotis, a fact which also clearly points to enlargement of the blood-vessels. All these experiments also gave the same results with carbonic acid baths below the indifferent temperature—that is to say, at a temperature at which plain water baths would produce contraction of the blood-vessels. Then Bruns and Koenig,[8] with the aid of Weiss's capillary microscopy, which makes direct observation of the capillaries possible, have detected a rapid and "well graduated" flow in the capillaries, and have interpreted this discovery to mean that in a carbonic acid bath an enlargement of the smaller arteries and arterial plexus of the skin takes place (the deeper-lying blood-vessels probably remaining contracted). Jacob,[9] as the result of comparative measurements of the temperature of various parts of the body, comes to the conclusion that the capillaries enlarge in natural carbonic acid baths.

These researches, which confine themselves to the peripheral vessels, cannot be made the ground of trustworthy conclusions as to the behavior of the whole circulatory system. The method of examining a peripheral blood-vessel, which up to the present affords the best opportunity for forming an opinion upon cardiac activity, is the "volumbolometer."[10] With the aid of the modifications made by him in Sahli's principle, Hediger[11] found a rise in the pulse volume in a cool carbonic acid bath, from which he draws the conclusion that the cardiac output becomes greater and the heart's activity is increased in these baths. He then assumes an increase of tone in the peripheral blood-vessels. Now this instance of cardiac activity is not found in cool plain water baths, for here a lowering of the pulse volume takes place (in contrast to warm plain water baths). So we see here, too, a specific result of carbonic acid: "The training of the heart muscle by, at the same time, soothing and disciplining its rhythm."

Nevertheless, the objection can be advanced against "volumbolometrie," as against every method for the examination of peripheral blood-vessels, that it admits of no quite definite conclusion as to the activity of the heart itself, since a compensating change in the region of other blood-vessels cannot be taken into consideration. Now clinical experience in general, as well as the results of direct investigation of the heart (for instance percussion, auscultation, decreases of dilatation, and the increase of the abnormally low blood-pressure by carbonic acid baths in cases of heart weakness—comp. Schott[2]), point to the fact that these baths work directly upon the heart. It is a great advantage that we are now able, with the help of the electrocardiograph, to register changes in the action of the heart itself without the necessity for an examination of the peripheral vessels. It must, however, be emphasized that it is still extremely difficult to draw quite clear conclusions with regard to changes in certain qualities

of the heart's action from the changes in the single electrocardiographic waves. The most important change by which we are enabled to judge of the functioning of the heart (with the exception, of course, of rhythmical disturbances) may be change in the size of the F. wave and in the quotient of I:F. Nicolai[12] has pointed out that a decrease in the quotient of I:F (comp. also Schuetze[13] and Jastrowitz[14]), shows favorable working of the baths, and that an increase of the F. wave, *ceteris paribus*, justifies the conclusion that there is an increase in the contracting power of the heart. On the ground of electrocardiographic researches, he advances the opinion that cold bath treatment has a more favorable effect upon the heart than warm, and that the efficacy of the cold applications will be increased by the addition of effervescing gases (O,CO_2) and of brine.

Rheinboldt and Goldbaum[15] prove by experiments upon healthy subjects, and upon patients suffering from slight disturbances of compensation, that the effect of oxygen baths upon the electrocardiogram is irregular, while that of carbonic acid baths shows extreme and at the same time exactly regular variations in the height of the waves. The tendency of the F. wave to rise is particularly strong. Brandenburg and Laqueur,[16] on the ground of their experiments upon patients suffering from diseases of the heart, attribute great importance to the increase in the number of the volts of the F. wave caused by carbonic acid baths, taking into consideration the increase in the electric resistance of the skin. For this is frequently present in cases in which there is clinical improvement of the general condition, raising of the blood-pressure, slowing down of the pulse, and retardation of the transmission of motor impulses; and it is absent, together with these symptoms, in cases in which the patients respond badly to the baths in consequence of an abnormal reaction of the nervous reflex mechanism. They emphasize the incomparably greater efficacy of the carbonic acid baths and salt baths in comparison with that of the usual plain water baths. The changes of the electrocardiogram remain long after the baths, and the first bath seems to have the greatest effect so far as the electrocardiogram is concerned, as Laqueur has proved by his experiments. The result of Bickel's[17] experimental studies led him to the following statement as to indication: that carbonic acid baths are above all indicated in cases in which there is a decrease in the heart's power but where reserve power is still present.

Now it is extremely important that Weber,[18] as the result of a quite different experimental method originated by himself, which is a specialized use of the plethysmographic method, arrives at entirely analogous results. The favorable effects of baths containing carbonic acid, when correctly indicated, can be well proved by his method.

He is of opinion that, with regard to carbonic acid baths, and quite especially in the case of natural ones, it is by no means a question of a mere temporary stimulation of the heart muscle, but that, owing to the specific influence of the carbonic acid, new, and until then unused, power is supplied to the circulatory functions, and that this is in reality often auxiliary power which has long been developed, but which, in consequence of some hindrance, has been used either not at all or insufficiently. And this power is brought into coöperation with the heart's functions through the stimulation produced by the action of the carbonic acid.

In the succession of experiments upon the condition of the heart itself and of the blood-vessels, we will mention in passing those of Liwschitz[19] with the "Flame-tachograph," which led him to the conviction that there is an increase in the heart's output and a contraction of the blood-vessels in a cool carbonic acid bath.

Quite special attention must be paid to the recent research work of Liljestrand and Magnus.[20] Starting from the question if, in a natural, cool carbonic acid bath, in which a considerable amount of warmth is withdrawn from the body, a chemical regulation of warmth takes place without muscular activity, they arrived at the following results by means of complicated methods: In a natural carbonic acid bath (St. Moritz)

at a height of 5800 feet considerable dilatation of the blood-vessels took place; neither increase in metabolism nor chemical regulation of warmth could be proved; the consequence is a reduction of the temperature of the body, with a maximum of over one degree, which may persist for a considerable time after the bath if the body remains absolutely still. These writers show, by modern methods, that in more than half of their experiments an increase takes place in the heart's output per minute of, on an average, 52 per cent.

It has repeatedly, and very rightly, been emphasized that definite opinions as to curative results should be formed only in reliance upon the results obtained by the employment of all possible methods of research. A comparison of general clinical experience with the results of the various experiments discussed above confirms Strasburger's conclusion, already quoted, that carbonic acid baths exercise the heart under protective conditions which facilitate its work; that, in fact, the right use of such baths is for the heart a "gymnastic lesson" (Schott). It is, on the one hand, the increased output of the heart, on the other the effect upon the blood-vessels, which produce the improvement in circulation. The slowing down of the pulse plays an important part here, for only when this occurs is it possible, by means of slow and powerful contractions, to produce stretching and exertion of the muscle during the contraction, and this leads to hypertrophy, and thereby to the possibility of increased development of power.

We will now briefly consider the question of how the effects of carbonic acid are to be explained.

In order to form an opinion upon the operation of carbonic acid baths, we will take into consideration the points collected and emphasized by Dalmady:[21] In the first place a considerable withdrawal of warmth, with, at the same time, lessened sensitiveness to changes of temperature. The subjective feeling of warmth in cool carbonic acid baths is, indeed, a fact which has been frequently observed and which is partly to be explained by the isolating effect of the gaseous layer (Schott), partly by specific irritation of the temperature nerves (Goldscheider[22]). It can also be demonstrated calorimetrically that carbonic acid baths cool more rapidly than plain ones. To this must be added that, according to Loewy (quoted from Dalmady), the loss of warmth by radiation, such as occurs in carbonic acid baths owing to the isolating effect of the gaseous layer, causes the least sensation of cold. Further are to be taken into consideration the mechanical action exerted by the rising gas bubbles, and the weakened power of sensation, owing to the mosaic-like continuity of different sense impressions in the skin.

For a long time it was believed that, in addition to the mechanical and isolating properties of carbonic acid, it was also effective by means of absorption through the intact skin, a point of view which seemed to be proved by the experiments of Winternitz.[23] Liljestrand and Magnus, however, have recently called attention to the fact that that which Winternitz takes as proof of the resorption of carbonic acid—*i. e.*, the increase in its excretion through the lungs in comparison with the taking in of oxygen, and the increase of the respiratory quotient to the value of more than one—are caused entirely by overventilation, as the alveolar carbon dioxide tension is correspondingly reduced.

On the other hand, however, Dalmady's experiments cause it to appear very probable that resorption of carbonic acid in its gaseous condition does occur; he showed that the carbonic acid bubbles form upon the excretory ducts of the cutaneous glands, and calculated that the carbonic acid there must stand under high pressure, so affording very favorable conditions for its reception into the organism. It is, indeed, also known, on the other hand, that the skin plays an important part as an organ for the excretion of carbonic acid. Judging from the iontophoretic experiments cited by him, it is open to question if the carbonic acid ions are biologically operative; besides this, more than 99 per cent of the carbonic acid in water is present in the free form, and not as ions (Thiel and Strohecker[24]).

Attempts have been made to reconcile what we know of the activities of carbonic acid with our more modern opinions upon the permeability of the cell limits. Arnoldi,[25] who is also of opinion that there is resorption of carbonic acid, finds the mode of its activity to consist in a change of the electrolytical equilibrium and, through that, in the permeability of the cellular membranes, especially, also, with regard to sugar. This produces a greater consumption of carbohydrates and an increase of the penetration of convertible substances into the heart muscle. He supports this opinion by experiments dealing with blood sugar and chloride of sodium of the blood, carried out in artificial carbonic acid baths, which showed a regular reduction of blood sugar, a result which similar experiments in the natural spring baths of Nauheim did not confirm.

This last observation brings us to a few final remarks upon the difference in the activity of the natural and of the artificial baths. We know, from the experiments of von der Heide,[26] that, from a purely physical point of view, the quantity of carbonic acid contained in artificial baths decreases far more rapidly after the preparation of the bath than that in natural baths; that the distribution of the carbonic acid in the successive layers of the water is far more even in the natural baths; and that, in the case of the artificial baths, owing to the speedier escape of the carbonic acid, the air above the bath contains a higher percentage of carbonic acid than that above a natural one, the latter holding the carbonic acid more firmly bound. Although, by means of the utmost care in observing all possible precautions in the preparation of artificial baths, the working of the natural baths may, perhaps, be approached in one direction or another, nevertheless the repeated and independent experience of so many observers as to the difference in the efficacy of natural and of artificial carbonic acid baths urges caution. The dilating effect of such baths upon the blood-vessels, which is therapeutically so essential, is, undoubtedly, much more pronounced in the natural baths. It was at the natural Nauheim springs, so rich in carbonic acid, that Isaac obtained a considerable increase in pulse retardation, while Mueller's experiments in artificial baths showed the contrary result. It was also at the Nauheim natural thermosaline baths that Schott proved dilatation of the blood-vessels by observing the lowering of the blood-pressure, which was confirmed by Meyer by plethysmography.

Dalmady, too, has been struck by the difference in the reports of various authors with regard to vasomotor action. The effect of natural baths upon the electrocardiogram appears, according to Laqueur, to be superior to that of the artificial. Fellner,[27] too, is of the opinion that many divergences in the reports of different writers may be accounted for by the difference between natural and artificial baths. This difference is quite strongly shown in the experiments of E. Weber. He found, by his method, that not only were the effects of the natural baths more lasting than those of the artificial, but also that the former were often very efficacious in cases where the latter had been absolutely without effect. In these experiments great care was taken, by covering the bathing-tub, to avoid the inhalation of escaping carbonic acid (which might, under certain conditions, produce a misleading impression).

Whether the great differences in biological activity are to be entirely explained by the physical differences mentioned above, or if still other causes unknown to us play an important part, must be left to future investigation.

BIBLIOGRAPHY.

1. Schott, August: *Berl. klin. Wochenschr.*, 1880, No. 25; 1855, No. 33.

2. Schott, Theodor: *Medical Record*, Feb. 14, 1891; March 11, 1899. *New York Medical Journal*, May 11, 1907. Balneo-Gymnastic Treatment of Chronic Diseases of the Heart, Blakiston's Son, Philadelphia.

3. Strasburger, J.: *Dtsch. Archiv f. klin. Med.*, 82, 459, 1905; *Med. Klinik*, 1914, No. 23.

4. Müller, O.: cf. inst.; *Med. Klin.*, 1908, No. 47, p. 1817.

5. Hirschfeld: *Zeitschr. f. Balneol.*, 5, 368, 1912/13; *Zeitschr. f. physik. u. diätet. Ther.*, 19, p. 1, 1915.

6. Meyer, M.: *Zeitschr. f. Balneol.*, 8, p. 101, 118, 1915.

7. Isaac: *Zeitschr. f. Balneol.*, 1917, p. 15.
8. Bruns and Koenig: *Zeitschr. f. physik. u. diätet. Ther.*, 24, p. 1, 1920.
9. Jacob: *Verhandlgn. d. Kongr. f. inn. Med.*, 1914, p. 458.
10. cf. Reinhart: *Dtsch. Archiv f. klin. Med.*, 127, p. 300, 1918.
11. Hediger: *Schweizer med. Wochenschr.*, Jg. 50, No. 24, p. 475, 1920; *Schweizer med. Wochenschr.*, Jg. 51, No. 7, p. 151, 1921.
12. Nicolai: *Veröffentl. d. balneol. Gesellsch.*, 1912, p. 128.
13. Schütze: *Med. Klin.*, 1914, No. 18, p. 766.
14. Jastrowitz: *Zeitschr. f. exp. Pathol. u. Ther.*, 14, 1913.
15. Rheinboldt and Goldbaum: *Zeitschr. f. exp. Pathol. u. Ther.*, 9, p. 639, 1911.
16. Brandenburg and Laqueur: *Med. Klin.*, 1914, No. 16, 689; *Zeitschr. f. exp. Pathol. u. Ther.*, 16, 1914.
17. Bickel: *Veröffentl. d. balneol. Gesellsch.*, 1912, 167.
18. Weber: *Zeitschr. f. exp. Pathol. u. Ther.*, 18, 1916; *Zeitschr. f. d. ges. exp. Med.*, 8, p. 1, 1919.
19. Liwschitz: *Zeitschr. f. exp. Pathol. u. Ther.*, 4, 693, 1907.
20. Liljestrand und Magnus: *Schweiz. med. Wochenschr.*, No. 48, 1921; *Pflüger's Archiv f. d. ges Physiol.*, 193, p. 527, 1922.
21. Dalmady: *Zeitschr. f. phys. u. diätet. Ther.*, 24, p. 137, 185, 1920.
22. Goldscheider: *Med. Klin.*, 1911, No. 20, p. 766.
23. Winternitz: *Dtsch. Archiv f. klin. Med.*, 72, p. 258, 1902.
24. Thiel und Strohecker: *Ber. d. deutsch. chem. Gesellsch.*, 47, i, p. 1061, 1914.
25. Arnoldi: *Münchener med. Wochenschr.*, 1922, No. 29, p. 1078.
26. Von der Heide: *Zeitschr. f. Balneol.*, 3, p. 644, 1910/11; *Veröffentl. d. balneol. Gesellsch.*, 1909, p. 93.
27. Fellner: *Med. Klin.*, 1908, No. 47, p. 1818.

Cancer of the Penis

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Cancer of the penis was one of the first lesions described by the medical profession. Celsus, Saporta, Roland, and Hildanus, all mention what was apparently carcinoma of this organ; and describe methods of treatment and operation.

It is not so commonly seen as cancer in some other portions of the body, and according to some statisticians is not so malignant. At least carcinoma of the penis is not apparently so fatal as the same lesion of the jaw, mouth, or tongue. Yet it does exact a yearly toll of human life; and I am convinced that positive cures from malignant disease of the penis are not so easily obtained as some would have us believe. Furthermore it would seem that a portion of the mortality may possibly be attributed to some such belief. Certain it is that the urologist should deal as boldly with cancer of the penis as does the general surgeon with a malignant tumor of the breast.

The problem is an extremely important one to the urologist, and early recognition of the condition is vital. For it is my conviction that a radical operation offers the most to the sufferer.

Cancer of the penis constitutes from one to three per cent of all cancers in the male. Paget's and Billroth's statistics prove this fact, and they are to-day the best at hand. At the Massachusetts General Hospital 93 cases have been recorded in the past thirty-three years, and out of 1685 cases of cancer in all forms at the New Orleans Charity Hospital, 39 cases, or 2.3 per cent, were of the penis. Andrew's statistics record 62 cases in 7881 of primary cancer, which is less than one per cent. The records of the St. Louis City Hospital gave a percentage of one and six-tenths.

Carcinoma of the penis usually appears after the age of fifty, and is generally preceded by some form of chronic irritation. Freyer reports a case in a youth of seventeen, and Curtis had a boy of eighteen with cancer of the penis. I have seen the condition in a man of twenty-two, a cigarmaker by occupation. Kauffman says that 6 per cent of the cases which he studied appeared in the third decade of life. Thompson and Schuchardt both speak of a precancerous balanitis as an important etiologic factor in the transition from normal epithelium to epithelioma. Schuchardt terms the condi-

tion psoriasis preputialis. Thus the question is apparently settled that the causes leading to epithelioma of the penis do not differ widely from the productive causes upon other epithelial structures. If these inferences are correct, and I believe that they are, for the array of data from the time of Breschet and Ferru's work in 1823 to the present time is convincing, it becomes the duty of the urologist to warn his patient against the common sources of irritation to the glans penis and the prepuce. It is further my belief that penile epithelioma would be almost unknown were circumcision practiced more generally. In substantiation of this inference the Jewish race may be mentioned. Circumcision is a religious rite with them and cancer of the penis is almost unknown. In those cases reported in Hebrews circumcision has as a rule been poorly done, or adhesions between the glans and prepuce have been allowed to remain, forming a pocket in which the irritant smegma could be retained. I have seen cancer of the penis in a Hebrew, but accompanied by preputial adhesions to the corona glandis.

Chancre or chancroidal scars may become the site of epithelial change, but rarely so unless accompanied by some degree of phimosis. Cancer of the penis does not as a rule involve the scrotum by mere contact unless the individual is uncleanly in his habits, and allows the foul discharge from an ulcer to so irritate the skin as to produce chronic thickening. Another source of contact which has been thought to produce disease of the penis, namely, the female cervix, is not I feel well established. The French have laid stress upon a so-called cancer a' deux, or contact cancer; and although I have seen such lesions where the wife also presented cervical disease, it is my opinion that the two were merely coincidental. Demarquay cites a case in which he believes that cancer of the penis was acquired by contact with a cancerous cervix. McFarland cites eight such cases, and Bruce another. In one of our own cases the wife evidenced a cancer of the cervix. Of course the inference of contact cancer is strengthened when we consider the transmissible nature of the disease in some lower animals, as the rat and chicken.

The hereditary tendency in cancer of the penis does not seem to be so well established as in cancer of the breast. However there are on record some very interesting cases of this nature. J. D. Barney reports an instance where father and son suffered from penile carcinoma; while Dr. Maud Slyes' experiments would almost cause one to believe in the inheritance theory. Haviland and others assert that certain houses are infected, and cite many instances to prove the impression. Luson, however, again lays stress upon the coincidental nature of these facts. J. D. Barney's statistical study of one hundred cases tends to prove the greater frequency of occurrence in men who perform manual labor, and he advances the etiologic theory of trauma.

Cancer of the penis is seen most often upon the dorsal aspect of the glans. Barney reports 69 per cent of the cases he studied as so presenting. In Demarquay's and Barney's statistics 80 to 85 per cent of the cases studied had phimosis of marked degree; and Dennis substantiates the view that low-grade inflammatory changes are often the forerunner of cancer.

Kuttner recognizes three groups of penile cancer: (1) Papillary neoplasms; (2) carcinomatous ulcers; (3) non-papillary carcinomatous tumors. In the first variety the growth starts as a warty nodule, which sooner or later breaks down, discharging a foul-smelling bloody fluid. Subsequent induration and ulceration eventually destroys the entire glans or prepuce. The second variety begins as an ulcer upon the corona or the glans proper. It has a firm base and papillary outgrowths spring from its margins. The spread of ulceration is more rapid than in the first variety, and lymphatic involvement occurs earlier. The third form is rare; it begins usually in the body of the glans, forming a hard tumor, and not tending to ulcerate. In structure this type resembles the primary carcinoma-

tous nodule seen in the mammæ, and it is the most malignant form.

There are three ways in which the primary disease extends to deeper structures: first, by continuity of tissues; secondly, by the formation of new carcinomatous nodules in the corpora cavernosæ; and thirdly, by extension throughout the lymphatics. Kuttner reports the presence of nodules in the cavernosæ apart from the growth, and separated by intervening healthy tissue.

Jacobson comments upon the variety of ways in which the beginning lesion manifests itself. There is the form like a warty excrescence—the type wherein an indurated nodule appears beneath the surface of the mucosa; another variety appears as a superficial excoriation or erosion; while a fourth form exists as an ulcer in an old chancre or chancroidal scar, a cicatrix, or a preputial fissure. Rarely the disease upon the glans is an extension from the scrotum or from the urethra.

Paget's disease of the glans penis may be met with, and has been recognized as a precancerous condition by the English school. A. Marmaduke Shield refers to three such cases, one being his own; while Tarnowsky of Petrograd and Prospelof of Moscow have reported one each. Shield believes that many of the intractable cases of balanoposthitis seen in old men are precancerous epithelial changes.

Local extensions may occur either late or early, but it is best for the surgeon, in view of Kuttner's studies, to consider them as an early accompaniment. The superficial lymph vessels drain into the inguinal nodes and hence involve the groin. The deeper lymphatics drain into the pelvic nodes and thus may involve the structures about the iliac arteries and eventually even more remote tissues. Kuttner has shown that metastases may be found in the viscera while there is still no palpable evidence of disease in the inguinal region. This condition is most common as an accompaniment of the third form, the non-papillary carcinomatous tumor. However, Kauffman believes that inguinal nodes are involved in the majority of cases when first seen, and that in over 75 per cent of cases this involvement is bilateral. The explanation lies in the bountiful lymphatic anastomosis of the dorsum of the penis and over the suprapubic area.

In view of what has already been said upon this subject it is needless for me to repeat that I am an advocate of early and radical surgery.

Cases have been reported that lived eleven years without operation. The gross mortality varies between 30 and 35 per cent. About 15 per cent develop visceral metastases. A 38-per-cent recovery is apparently possible under the routine methods of operation. This, however, does not seem satisfactory; and here again the problem of early diagnosis and radical operation should offer the best possible means of combating the mortality. I do not favor temporizing methods when confronted with malignant disease of the penis. Let the surgeon place himself in the position of the sufferer. Death from carcinoma of the penis means slow and hideous torture. Were it my lot to suffer from such a lesion, I would select ultra-radical surgery at the hands of a fearless operator, rather than a mere removal of the growth with a partial eradication of the inguinal lymphatic structures. Such cases are later to be found in the wards of our charity hospitals. These poor souls have passed beyond the aid of surgery and are left to die by inches. In my experience radium has accomplished nothing more than an increase in their suffering. I do not desire to condemn radium, for I believe firmly in its use; but it does seem to me to be a very poor substitute for cold steel. Massive doses of deep penetrating *x*-ray, as administered at the present time, I believe in sincerely. However, these procedures should be made secondary at all times to the knife. Fulguration I mention only to condemn it. It has been my misfortune to see several cases that had been "cured" by fulguration. They all developed secondary growth, with the inevitable result. Cases have been cured by simple circular amputation with no attempt to

remove the inguinal lymphatics; but they are few, and it is questionable if the surgeon really dealt with carcinoma. Among the less radical procedures, the Nicoll operation has most to offer. It is undoubtedly based upon sound surgical principles, but is only applicable to early conditions. Where any considerable involvement is manifest a complete extirpation of the structures is imperative. A modification of Treves' operation is the one which I prefer.

Upon the question of emasculation I have an open mind; but I fail to see how the scrotal sac minus a penis adorns a man or adds to his pleasure in life. Perhaps it were best to put the problem before the patient, and if he so desires preserve the testicles if possible. Pantaline, however, advises emasculation and speaks of it as a more humane procedure.

I have performed extirpation of the penis six times, for massive carcinoma. Two of the patients are alive to-day—one after five and the other after seven years. The other four died from metastasis—one in the liver, one in the liver, kidney, and lung, one in the bowel, and the fourth from recurrence in the groin. In the future it will be my practice to remove the entire lymphatic chain from above downward, including the sheath of the vein, and if necessary open the abdomen and remove the glands along the extension of the vessels as far as the bifurcation. These structures should be resected in one continuous mass as in breast amputation. Great care should be exercised to explore and evacuate the depths of Scarpa's triangle. The penis must be removed in its entirety, and its attachment to the bones of the pelvis chiseled off.

Following operation I advocate the application of *x*-ray by an experienced man. In fact, were it not that *x*-ray might cause a fatal delay in healing I would be disposed to apply it directly to the open wound and perform a later closing operation.

Value of Diagnostic X-ray in Neoplasms of the Urinary Bladder

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The advantage of introducing an ounce of bismuth emulsion into the bladder and securing an *x*-ray of the pelvis in every patient with symptoms or signs suggestive of bladder growth is self-evident. The procedure should be routine, but is frequently neglected where facilities are inadequate or in the rush of a busy office. Very interesting and helpful pictures are obtained, as illustrated in Fig. 1. This plate was taken of a patient treated at the Howard A. Kelly Hospital in 1912, and the case has been previously reported (Howard A. Kelly and William Neill, Jr., "Cauterization and Fulguration of Bladder Tumors," *Journal A. M. A.*, March 4, 1916). The area marked A depicts a conglomerate mass of papillary growths, B is the injected bismuth in suspension, and C is the zone of urine and air extending to the bladder wall. The peculiar mottled appearance of the tumor is due to the deposition of the bismuth along the villi and the arching branches of the growth. The periphery of the tumor is characteristically jagged instead of presenting a smooth, rounded outline. (This picture was printed directly from the *x*-ray film, thus reversing the shading from that of the following illustrations, which were printed from photographs of the plates.)

The two following instances further typify the advantage to be gained by this procedure:

Case 1.—Mrs. B. P. F., aged forty-eight, entered the Howard A. Kelly Hospital January 5, 1923, with the complaint of hematuria. The preceding April she had had an attack of bladder trouble characterized by pain and a sense of pressure over the symphysis, accompanied by albuminuria, pyuria, and retention. She had some hematuria at that time and many subsequent transient attacks. Nine days before admission to the hospital bleeding from the bladder had commenced, which continued freely up to the present. No cystoscopic examination had been made. Her blood

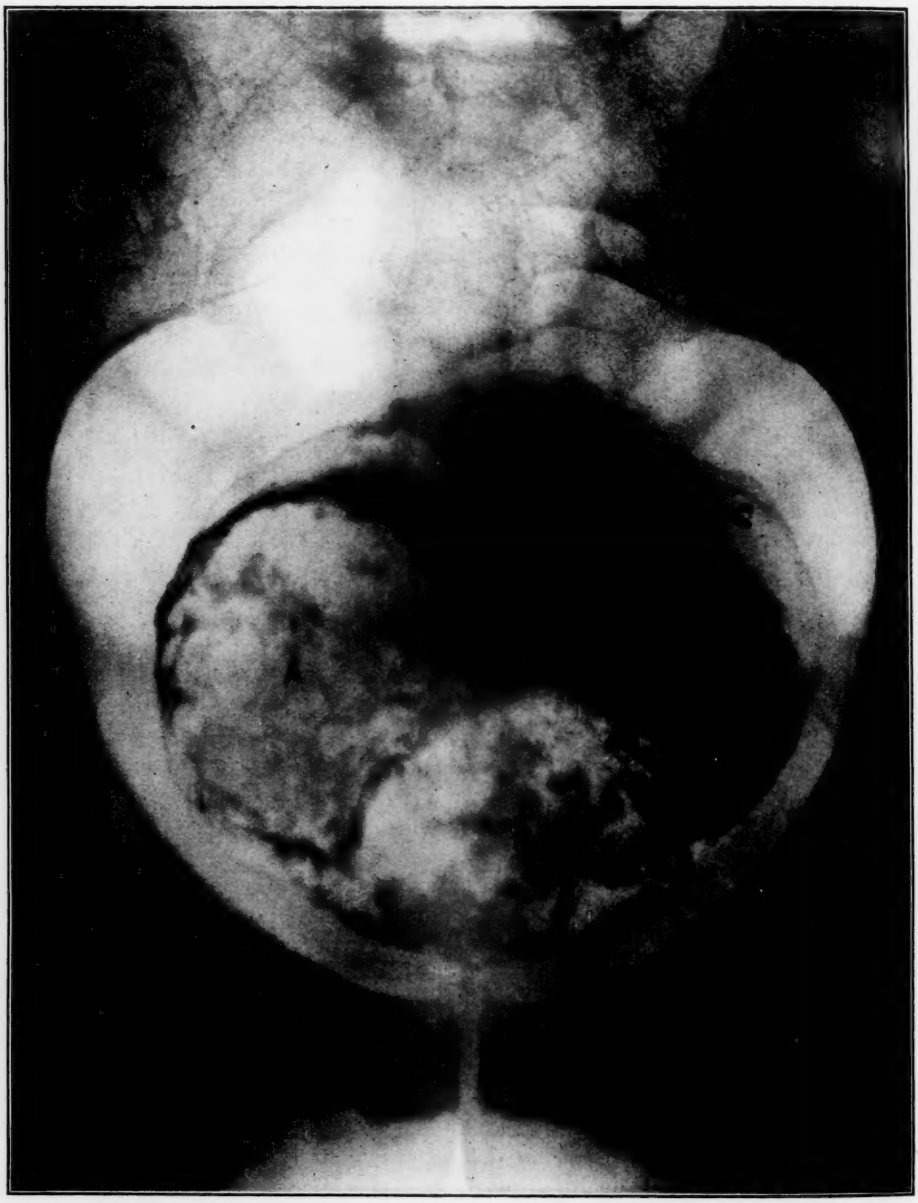

FIG. 1.—X-ray of bladder after injection of bismuth emulsion. At A papillary growths are shown; at B the suspension of bismuth; C is the zone of urine and air extending up to bladder wall.

count showed R. B. C. to be 4,568,000 and hemoglobin 85 per cent. The urine was filled with blood. The Wassermann was negative. Fig. 2 shows the *x*-ray of the bladder taken after injection of 60 cc of bismuth emulsion and portrays a growth on the left wall of the bladder. On examination with the patient in knee-breast posture with the Kelly aerocystoscope a good expansion of the bladder was ob-

FIG. 2 —X-ray of bladder after injection of bismuth emulsion. The growth is shown on left wall of bladder.

tained. The base, right side and vertex of the bladder were normal; on the left lateral wall Dr. Kelly found a pedunculate tumor four and a half centimeters in length and three centimeters in diameter, using the diameter of the end of the open-air cystoscope as a measure.

Case 2.—Miss A. M. V. J., aged sixty-one, was admitted January 8, 1923, complaining of a bladder tumor. She gave a history of having suffered with hemorrhage from the bladder the preceding May, and again in October; and finally a serious twenty-hour hemorrhage took place in December. She had been examined cystoscopically by specialists in Rochester, N. Y., who diagnosed tumor of the bladder and advised operation. On the day of admission vaginal and cystoscopic examinations were made at once by Dr. Kelly. Vaginal examination revealed a fibroid uterus measuring sixteen centimeters from vagina to abdomen. On cystoscopic examination, using the open-air cystoscope with the patient in knee-breast posture, the urethra was noted as very small, and even after dilatation with the conical dilator only a smaller cystoscope eight centimeters in diameter could be used. The bladder mucosa was pale, with normal vascularization, and no tumor whatever was discernible. Hence the diagnosis was deferred, and the presumption was that the bleeding was either renal in origin or may have been uterine, caused by the fibroid. Fortunately the patient was not informed that her bladder was normal, but diagnosis was withheld until an *x*-ray plate with bismuth had been taken. Fig. 3 shows the result: the defect on the left proving the presence of a tumor. With this positive finding the cystoscopic examination was repeated, and after enlarging the urethra with Hegar's dilators a ten-millimeter diameter cystoscope was in-

FIG. 3.—X-ray of bladder after injection of bismuth emulsion. The defect on the left shows the presence of a tumor.

troduced, and a pedunculated growth found springing from the left lateral wall of the bladder, four centimeters long by two and a half in width.

The subsequent developments in these two cases are of interest. Case one was treated on January 8 by the introduction into the pedicle of the growth of a sterile glass spicule containing one millicurie of radium emanation. She had been having hemorrhages steadily for nine days before admission, however, and the bleeding con-

tinued unchecked until by January 15 her R. B. C. had dropped to 1,616,000 and hemoglobin to 32 per cent. A blood transfusion was given on that day by Dr. Walter A. Baetjer, and the tumor was fulgurated in an effort to stop the bleeding. On January 18 the patient was unconscious and practically pulseless; two transfusions were given by Dr. Baetjer and Dr. Sydney R. Miller, and at night Dr. Kelly performed an emergency suprapubic cystostomy, with removal of the growth and ligation of the bleeding vessels by tight suturing of the base. A rubber drainage tube was placed in the bladder. These heroic measures saved the patient's life and she started to gain at once, her blood count rising to 3,388,000 R. B. C. and 59 per cent hemoglobin by February 2. The bladder was irrigated frequently through the suprapubic opening, and this opening was rapidly healing when the patient was discharged the middle of February. When last heard from on March 19 her condition was excellent.

Case two was more fortunate. She had not been depleted by loss of blood and her general condition was splendid. Two spicules of radium emanation each containing 1 millicurie were inserted into the base of the tumor on January 9, and four days later a sound containing 671 millicuries was held directly against the growth for five minutes. The patient left for home on that day, and on her return March 5 cystoscopic examination revealed the tumor to have diminished to one-half its original size. Aggressive radium therapy was then given to elicit further response; six spicules of 1 millicurie each were implanted, radium was held directly against the tumor through the cystoscope, and a heavy external distance treatment was applied suprapubically. The patient has progressed nicely to date.

In conclusion, a review of these cases offers the following suggestions:

1. Bladder tumors that are bleeding freely and have been bleeding severely for a long time may present serious obstacles and require drastic measures.

2. In the usual case diagnosed at an earlier stage splendid results can be obtained with radium, as the growth may be aggressively radiated through several channels with an immediate response: (*a*) by implantation of spicules of emanation which remain permanently in the growth; (*b*) by direct application, holding a sound containing the radium against the tumor through an open-air cystoscope; (*c*) by external radiation over the abdomen; and (*d*) by application of radium through the anterior vaginal wall.

3. All treatment follows accurate diagnosis, and *x*-ray plates of the bladder region with bismuth emulsion in the bladder provide a valuable addendum to a careful cystoscopic study.

The Use of Quinidine in Auricular Fibrillation.

FRASER, in the *British Medical Journal* of March 24, 1923, states that quinidine treatment will result in a stable normal rhythm if the cause of the auricular fibrillation can be successfully treated or has ceased to be active.

Cases in which there are extensive structural changes in the heart are not suitable for quinidine treatment, especially if the response to digitalis is not good, as dangerous symptoms may result.

In some cases at least the comfort and efficiency of the patient are greater when a normal rhythm results from quinidine treatment than when digitalis treatment alone is used.

In the cases in which the results are satisfactory larger doses than ten grains of quinidine sulphate at intervals of six hours are not necessary, nor smaller initial doses than five grains three times a day.

If necessary to maintain normal rhythm, he claims quinidine may be continued to be administered indefinitely in doses of at least five grains three times a day, and it is probably advisable in all cases to continue it for some weeks after normal rhythm has resulted, though in gradually decreasing doses.

Editorial

THE VALUE OF BISMUTH IN SYPHILIS.

More and more attention has been paid by the profession during the last two years to the question as to whether various preparations of bismuth have any specific effect in combating syphilis, and evidence has been accumulating to a very considerable extent indicating that it possesses such an influence. Indeed the number of clinical investigators who have reported upon its use in combating various syphilitic manifestations has now become very great, and no less than forty-two references to the literature on this subject, nearly all of which are in the French literature, have recently been put before us by Levaditi of the Pasteur Institute in Paris, whose name as a laboratory and clinical investigator is universally known.

In a communication which he has made to the London *Lancet* he dwells chiefly upon two products: one which he calls trepol, which is basic tartro-bismuthate of potassium and sodium, and another which he calls neotrepol, which is a metallic bismuth held in suspension in a sterile isotonic solution containing 95 per cent of metallic bismuth.

In much the same way as arsenic has been recognized for many years as having specific properties in syphilis, so has it also been known that bismuth exercised a healing influence upon cutaneous lesions in this disease.

The difficulty heretofore has been that until the introduction of arsphenamine no arsenical preparation was sufficiently powerful, and up to recent times no modification of the salts of bismuth was adequate to meet the needs of the patient.

Those who wish to look up the literature on this subject or study an interesting summary of it, we refer to the original article, but the facts which are of chief interest to the practitioner may be embodied in the following remarks. In the first place it has been shown that bismuth has some specific effect in the treatment of chicken spirillosis just as has arsphenamine. Again, it has been shown by several investigators, in addition to Levaditi, that so-called trepol will cause a disappearance of lesions occurring in primary syphilis after two or three injections, and that such lesions often were sterile after a single injection in as short a time as twenty-four to forty-eight hours.

Various methods have been resorted to to introduce trepol into the body, some having employed it in doses of two to three decigrammes in oily suspensions by intramuscular injection, and some of the Italian investigators have gotten most excellent results in the rapid clearing up of various forms of the manifestations of the disease on the skin.

The Wassermann reaction may become negative after six injections, but as with arsphenamine so with bismuth, the conditions which yield most rapidly are mucous patches on various portions of the body with the rapid disappearance of the specific organism in these areas, so that Levaditi states in using neotrepol he has observed cicatrization of buccal mucous papules within four or five days and disappearance of the spirochete after the first or second injection. So, too, headache, fatigue and bone pains frequently ceased after the first injection. There is also a considerable amount of evidence showing that these preparations of bismuth are of valuable service in tertiary syphilis, whether it be gummatous, involving the bones, or the soft tissues.

Levaditi also believes that tabetics suffering from gastric crises are considerably benefited by either one of these preparations, and, again the notworthy point is made, that it often succeeds in patients in whom the disease has appeared to be resistant to arsenic and mercury. This observation, if true, is of great importance not only because it adds another arrow to our quiver, but also because it enables us to treat patients who may have developed

an immune strain of parasites through insufficient treatment.

As far as evidence is at hand at present the toxicity of bismuth may be almost ignored, for if it is given intramuscularly in oily solution absorption is so slow that it may be considered as non-toxic, although, on the other hand, if given intravenously the dose must be so moderate that it is probably impotent, and further because of the insolubility of the drug intravenous injections should not be attempted.

While it is true that the free administration of any preparation of bismuth over a considerable period of time may result in stomatitis, just as this condition may follow the free administration of mercury, it is also true that such conditions occur chiefly in those who are not careful as to the cleanliness of their mouths.

Studying the rapidity with which bismuth is eliminated by the kidneys, by the salivary glands, and by the digestive system, it would appear that it is found in the urine eighteen hours after the injection of soluble salts and twenty hours after the injection of insoluble salts, but its first appearance may be as early as half an hour after the injection. There is much difference of opinion as to this matter of its rapid elimination, however; some thinking that it appears early and persists a long time in the urine, and others that it is speedily eliminated.

The dose of trepol which Levaditi advocates is 2 cc of a suspension representing 2 decigrammes of the drug itself. This dose should be repeated every three or four days until about three grammes have been administered. It is best given by intramuscular injection in the upper portion of the buttocks. The same method holds true in regard to the use of neotrepol, which produces less pain than trepol itself and which should be given in doses of 1 to 2 cc of the 95-per-cent suspension every three or four days.

Levaditi is firmly convinced that these new bismuth preparations are capable of curing syphilis and speedily wiping out the Wassermann reaction. He asserts that they are equal to the new arsenical preparations, better than the mercurial preparations, and particularly advantageous, as we have already stated, in those patients in whom the disease resists the action of arsenic and mercury.

In a contribution to this subject in *La Presse Médicale*, Cajal and Spierer report upon the results which they have obtained by the use of this new method of treating syphilis, with special reference to the hereditary type of the disease.

All the patients that they report about were under two years of age, and most of them under one year of age.

They conclude that the preparation may be advantageously employed in this class of patients, and they do not seem to have discovered that there are any contraindications to its employment, using the tartrobismuthate of potassium and sodium in an oily suspension. No toxic symptoms nor painful manifestations accompanied the administrations, and they claim that trepol heals the lesions of hereditary syphilis with the same rapidity as arsenobenzol and mercury, and that it also rapidly induces a negative Wassermann reaction.

The dose which they use was 1 centigramme to each kilogramme of body weight, the quantity being increased or diminished according to the severity of the symptoms. In the case of children which are breast-fed, they suggest that the bismuth injection shall be given to the mother.

The number of injections is not precisely limited, the persistence in their use being governed by the same rules as control arsenobenzol.

Once more we find a further contribution to the use of bismuth in the treatment of syphilis from the pen of Pardo-Castello of Havana, Cuba, in the *Archives of Dermatology and Syphilology*. His views are expressed in the following summary which he places at the end of his paper. This summary of the subject, combined with a communication made by Dr. Klauder in the June issue of the THERAPEUTIC GAZETTE, gives our readers a fairly complete conception of the status of this interesting method.

He asserts that the bismuth salts have marked antisyphilitic properties. He has not observed a single accident from their use in over 180 injections. The use of sodium and potassium tartrobismuthate he claims is painful, and he finds stomatitis is likely to occur with its use.

Spirochetes disappear from the chancre and mucous patches after the second or third injection of quinine-bismuth-iodide.

The primary lesion and all the secondary manifestations heal in a short time, and the general disturbance and headache also disappear after the fourth or sixth injection.

Tertiary lesions respond more slowly, but they finally disappear entirely.

The effect on the Wassermann test is marked. It became negative in seven of nine cases.

Pardo-Castello's experience leads him to the belief that bismuth is entitled to a prominent place among antisyphilitic remedies, but that further experiments will show its real value as compared with the arsenicals and mercurials. Time alone will demonstrate whether bismuth will take the place of the other antisyphilitics or be used in combination with them, and it will also show whether the effects are permanent.

NEPHRITIS IN CHILDREN.

For obvious reasons the interstitial type of chronic nephritis is rarely, if ever, met with in young children. The parenchymatous type developing as a result of some acute infection is by no means rare, although in this class of patients acute nephritis, which is a true inflammation rather than a degenerative process, is more commonly met with than it is in adults, probably because they are more frequently stricken by one of the acute infections. Thus we know that an acute inflammation of the kidneys is most commonly caused by scarlet fever, and it is to be remembered that its manifestations develop usually as late as the fourteenth to the twenty-sixth day of the disease, and, therefore, that this complication develops after the ordinary course of the malady may be considered to have come to an end.

Another point of importance to be borne in mind is that the severity of the illness has no relationship to the probability of the development of nephritis, since cases in which the general symptoms of scarlet fever are mild seem to be just as prone to develop this complication as those in whom the disease runs a severe course. Exposure to cold is, of course, a very potent exciting cause in many of these patients, and the parents of such children should have it impressed upon them that the renal complication comes on late and, therefore, that preventive measures should be adhered to for a long period of time.

The frequency with which renal disease complicates scarlet fever varies greatly in different epidemics. Ashby, who is Physician to the Manchester Children's Hospital, tells us in the *British Medical Journal* that the incidence is roughly estimated at about ten per cent, that the outlook is usually good if the child is well taken care of, and that chronic nephritis rarely develops from the acute condition.

It is interesting to note that while such a catastrophe does not often occur as a result of scarlatinal nephritis, acute nephritis from other causes not infrequently slips into the chronic type, as, for example, those cases which arise from a bacteremia due to infected tonsils, and particularly in those instances where the onset of the disease is slow and insidious as one would expect in a degenerative process, so that not until puffiness of the face or marked scantiness of the urine is present does one suspect that the child's kidneys are impaired.

In very young children the difficulty in obtaining the urine militates against its being frequently examined. Ashby thinks that this difficulty can be avoided by having the child lie on a rubber blanket so fixed that the urine collects in a small pool at the end of the bed, or, in very young children, by holding them over some vessel when the bladder is full after a long sleep.

As to the amount of urine which a normal child should pass, Ashby thinks that the best method of obtaining this is by a simple mathematical formula; namely, that the age of the child in years should be multiplied by two and a half, and this will give the number of ounces per day. Thus, a child of six years should pass about fifteen ounces and a child of twelve about thirty ounces.

Ashby evidently is one of those who has much confidence in the so-called urea elimination test in all cases of nephritis and little confidence in the prognostic value of large or small quantities of albumin in the urine. This urea test in his hands consists in giving the child, after the bladder has been emptied, 150 grains of urea, or half an ounce to an adult, dissolved in 3 ounces of water flavored with some pleasant liquid like tincture of orange. An hour later the child passes water; two hours later he again urinates, and this specimen is kept for the estimation of the urea by the well-known hypobromite method. He says that if the percentage of urea after the test exceeds two the kidneys are fairly efficient, but if below two their condition is unsatisfactory.

The point in Ashby's paper, however, to which we wish to call particular attention, because it emphasizes the one that we have repeatedly made in these columns, deals with the matter of diet and especially with the use of protein food. Ashby insists that in the past the diet has been restricted too much, because every one needs a certain amount of protein to keep in good health, and, as we have said before, if protein is not afforded in the food, the body uses its own protein in order to maintain what might be called its nutritional balance. In other words, under these circumstances, we are not diminishing the work of the kidneys in eliminating protein educts alone, but we are also starving the patient of an essential foodstuff. In children this is particularly important to remember, because their nutritional balance is so easily disturbed and also because retention of urea or non-protein nitrogen in the blood is characteristic of interstitial nephritis rather than of the chronic parenchymatous form. Indeed, it will be remembered that in some cases a high protein diet is actually beneficial if dropsy is present, the urea which is formed acting as a diuretic, so that some of the German clinicians have actually gone so far as to use a very high protein diet in renal dropsy in order that urinary flow may be increased. Others do as Ashby does, administer 10 to 16 grammes of urea every morning for the purpose of clearing up obstinate edema.

So far as the treatment of children is concerned, therefore, Ashby advocates during acute nephritis what he calls, as do most English clinicians, a "slop diet" for the first ten days, but after that he believes that the diet should be gradually increased to include fish, eggs, and meat, even if albumin is still present. By this means some of the loss of albumin in the urine is compensated.

Finally, he believes that if the child can be suitably protected from cold it is a mistake to keep it in bed too long, and that a certain amount of exercise in a warm room helps to lessen the edema and makes the child less fretful.

We have long preached the doctrine that the almost universal view that nephritic cases should be deprived of meats is not only wrong in theory, but harmful in practice, and that this deprivation should only be maintained when a chemical study of the blood shows a high non-protein nitrogen retention.

DEPENDENCE UPON THE X-RAYS IN DIAGNOSIS.

It cannot be questioned that the introduction of the *x*-rays has resulted in remarkable additions to our diagnostic ability along certain lines, notably in surgery. The practitioner of medicine must, however, always recall the fact that the information given by their use is based upon what might be called "shadow pictures" and be careful not to attach too much importance to what he thinks he sees in these pictures. This is

the more true because such pictures when presented to several *x*-ray specialists may be interpreted differently by each of them, even if they are given the history of the case, as well as the results of the physical examination, by the clinician who has asked the roentgenologist to help him.

In a recent issue of the *International Clinics,* Brown points out that physicians are prone to depend too much upon the *x*-rays, with the result that their clinical examination of the patient is not as thorough as it should be, or that they allow themselves to be influenced by an *x*-ray report when other and possibly more correct conclusions would be reached by physical examination and a careful study of the case. Those who have *x*-ray pictures taken frequently know full well that some roentgenologists who produce beautiful pictures do not produce very reliable interpretations of them, and contrariwise, some of those whose pictures do not seem to be so clearly developed, nevertheless render opinions which are much more reliable than those of the former class. In other words, in a large proportion of cases, in medicine at least, the results of the *x*-ray examination should be utilized as part of the fabric which is used in building up the complete arch to make a diagnosis rather than as the keystone of that arch.

These facts are still more emphasized by a bulletin recently published by the Henry Phipps Institute for Tuberculosis of Philadelphia, dealing with the comparison of chests of normal children under physical and *x*-ray examination. This investigation was carried out under a grant made by the National Tuberculosis Association. An effort was made to determine what are the *x*-ray and clinical findings in the chest of a normal child up to ten years of age. The results show that both from the *x*-ray and clinical point of view the chest of the normal child varies widely, to such an extent that no standard normal chest could be selected. It is true that the *x*-ray may show departures from the normal, but it cannot determine the cause of the lesions nor can it decide between active and inactive tuberculosis according to this investigation. The history, the laboratory results, and the physical examination, in the opinion of this commission, must always be considered together and be well balanced.

It was found that the normal chest of a child under ten years of age presented such wide variations as to be beyond the possibility of exact description. The hilum shadow generally found lying entirely within the inner third, or zone, of lung area may be disregarded, or regarded as normal, except when it is made up of a solid mass of homogenous shadow. Furthermore, calcified nodes at the root of a lung without evidence of lung disease are of no significance except as a possible evidence of some healed inflammatory condition, and we are surprised to learn that these calcified nodes are a common finding, so-called, in normal chests of children under ten years of age. In a perfectly healthy chest of such a child the bronchial trunk shadows are not visible in the extreme apical regions. If the remainder of the lung is divided into three vertical zones extending outward from the lateral border of the spinal shadow, it will be found that the inner zone contains the root shadows, the middle zone contains the trunk shadows gradually fading out, and that the peripheral zone contains radiating lines which fade away before the periphery is reached. If in the middle or peripheral zones these shadows do not disappear as just described, the condition is not necessarily one of tuberculosis, but represents a past or present inflamtory process which may be and may not be due to tuberculosis.

THE ANESTHETIC ACTION OF PURE ETHER.

We assume that most of our readers have heretofore supposed that pure ether was not only essential for obvious reasons for the production of general anesthesia, but that the purer it was the more efficient it would be, yet it has been recently pointed out by Dale, Hadfield, and King in the London *Lancet* that doubt has been thrown upon this proposition to the extent of claim-

ing that perfectly pure ether was devoid of anesthetic properties, Baskerville and Hamor having made such assertions in 1911.

As the writers to the *Lancet* point out, such a claim, if established, would necessitate not only some practical change in the preparation of ether for anesthetic purposes, but a wholesale revision of our ideas on which the current theories of anesthesia have been based.

Dale and his coworkers, however, claim that this revolutionary proposition has not been supported by abundant evidence, although our readers will recall that Cotton in 1917 claimed that he had been able by purifying ether to deprive it of its anesthetic effects so that an animal while narcotized nevertheless was hyperesthetic and responded with abnormal vigor to irritation. It will be also recalled that Cotton believed that the anesthetic properties of ordinary ether were due to small quantities of dissolved gases, such as ethylene and carbon dioxide, and furthermore that the addition of these substances to pure ether not only resulted in narcosis being produced, but that anesthesia took the place of hyperesthesia. The difficulty with accepting this idea lies in the fact that ethylene, certainly in the quantities in which it is present, is devoid of the effects claimed.

Somewhat similar statements have been made since the paper of Cotton by Wallies and Hewer, who do not deny that pure ether is possessed of some anesthetic properties, but seem to consider it as a vehicle to carry the main anesthetic potencies and express the belief that various contaminating ketones were responsible for the anesthetic effects of ordinary ether.

It is interesting to note that as a result of a very thorough investigation on the part of Dale and his fellow workers, these statements have apparently been absolutely disproved. They not only covered the chemical aspects of the matter by the most careful analyses, preparing finally an ether which might be said to be chemically pure, but have carried out tests on animals and human beings, finding that instead of such pure ether being devoid of the powers of producing analgesia, it was, on the contrary, most efficient both from the speed of its action and in the absence of irritation of the respiratory passages, so that the induction of anesthesia was easily accomplished. Furthermore, they found that smaller quantities of ether could be used than of commercial ether, and again that recovery from the ether occurred, when its inhalation was stopped, at the normal rate. Employing pure ether in eight human beings suffering from operations which may be considered in general terms major operations, it proved most successful.

The result of this research is that substitutes for ether, or, to speak more correctly, ether which has been deliberately contaminated by other agents, is not to be considered advantageous, and in one of the substitutes marketed in England an inquiry addressed to the manufacturer stating that butyl alcohol had been found in their product resulted in these writers being informed that it should not be present.

Those who are particularly interested in this matter will, therefore, learn with interest that Dale, Hadfield and King assert most positively that the statement that pure ether is devoid of anesthetic action and that the activity of ordinary ether is due to impurities is entirely untrue.

THE TREATMENT OF CHRONIC INTESTINAL STASIS BY KAOLIN.

Some of our readers may perhaps recall the fact that some time since attention was called in the THERAPEUTIC GAZETTE to the employment of kaolin in the treatment of cholera, it being claimed that the kaolin absorbed toxic materials generated in the intestine by the specific organism of this disease and other organisms, and thereby greatly diminished toxemia.

Recently Jordan has published a paper in the London *Lancet* in which he insists upon the value of what he calls colloidal kaolin as an absorbent of intestinal toxins.

We are not quite sure what he means by colloidal kaolin, although he mentions an English preparation under a trade name, but apparently it is kaolin in a state of very fine subdivision.

While Jordan seems to be one of those who believe in following Lane, in the sense that surgical operations are essential in many cases of stasis, he nevertheless believes that there is a distinct sphere of usefulness for kaolin in the condition which we are discussing. He recognizes that mechanical support is essential, when by external means, or by the *x*-rays, enteroptosis is found to be present, and he also advises the employment of liquid paraffin in these cases and the use of warm saline clysters if the *x*-ray shows that the pelvic colon is much elongated. So, too, he adds to his treatment 10 minims of tincture of belladonna with a little bicarbonate of soda twice a day if there is any reason to believe that spasm of the pyloric or ileocecal sphincters is a factor in the case. It is evident, therefore, that he does not rely entirely upon kaolin for his therapeutic results, but he emphasizes his belief that the kaolin is useful, as we have intimated, if taken in the dose of a dessertspoonful of the powder in half a tumblerful of hot water night and morning to arrest decomposition and prevent absorption of toxins, and then when the kaolin has carried out its absorbent properties it is swept out of the intestine by saline purgatives and the use of the warm water enemata.

The conditions, to be more specific, in which he has found this plan of treatment to be useful, are, what is commonly called, dyspepsia, heartburn, flatulence, and many other every-day disorders of digestion.

Jordan claims that the appetite improves, patients gain in weight and in color, and have a feeling of increased vigor and good health, and that rheumatism, neuritis, asthma, and other symptoms due to intoxication are also cleared up. He even goes so far as to advise its use during the infectious diseases of childhood and during lactation on the part of the mother, and possibly on the part of the child, and finally calls attention to the use of kaolin in Asiatic cholera, going so far as to state that this disease "has lost most of its terrors since it has been shown to yield to frequent draughts of kaolin in watery suspension."

Jordan is so enthusiastic in regard to this plan of treatment that we confess to being somewhat doubtful as to whether he has not gone too far in making claims as to its therapeutic efficiency. If kaolin will do half that this writer claims, it will prove a valuable addition to our therapeutic measures.

THE PREVENTION OF ENDEMIC GOITRE.

It is well known that in certain parts of the United States ordinary goitre is far more prevalent than in others, and, further, that these areas are as a rule far removed from the sea. While much discussion has arisen as to the reasons underlying these facts, the point of therapeutic interest is that by the use of very small, or almost minute, doses of iodine the onset of goitre in young persons can be prevented, and when the thyroid gland has already become enlarged the use of this remedy results in its subsidence if resorted to within a reasonable time after the incidence of the trouble.

The full recognition of this fact, so far as this country is concerned, is, of course, due to the work of Kimball and Marine, whose observations have been confirmed by other American medical men, and by the investigations of others in European countries. The whole object of the treatment is to provide the individual with that infinitesimal quantity of iodine which people elsewhere constantly, or almost constantly, receive in their daily food, or at the seashore in the air they breathe. It therefore matters little in what form the iodine is ingested, provided it is taken in a form and dose which is incapable of disturbing digestion and offending the taste, and again provided its form is such that there is a

minimum of trouble on the part of the patient, the parents, or the persons in charge of children, in seeing that the remedy is regularly ingested for the comparatively brief periods which are necessary.

The greater part of the treatment has been carried out with iodide of sodium or potassium given in milk or otherwise, and in such small doses as to be practically free from disagreeable taste. In other instances special preparations which are known to contain iodine in a utilizable form have been used with equally good results, the point being that the individual needs iodine in some form. The number of these products made abroad, or in this country, is very numerous, such as iodalbin and the German product sajodin. For individual cases these may be used with advantage, but where great numbers are to be treated public officials may be inclined to use the ordinary salts that have been employed for other purposes for generations.

It is more than interesting that within the last few years so much has been accomplished by clinical, as well as laboratory, research in controlling disorders of nutrition and glandular function, with the result that abnormal states are prevented, or if existent, corrected.

THROMBOSIS AND EMBOLISM.

Among the causes not infrequently given for postoperative death is cerebral embolism. That such a complication can and does occur secondary to valvular lesions of the heart is beyond controversy. That the embolus which reaches the brain, causing the loss of life, or the impairment of function, may come from a clot which originates in or about a peripheral wound is difficult to understand, since such clot must necessarily first be caught in the liver or the lungs. That form of thrombosis which is most frequently seen in the femoral vein, following such trifling operations as that for the removal of the appendix, has given rise to much speculation regarding its etiology and remains as yet not fully explained. Postoperative thrombosis developing in the mesenteric venous system may occasion symptoms difficult to interpret and leading to fruitless surgical intervention.

The commonly accepted belief on the part of surgeons is that the usual form of postoperative venous thrombosis is incident to a form of infection not yet identified.

McLean and Barrett contribute an interesting study of this subject *(Chicago Medical Record,* April, 1923) which, though it does not largely clarify the situation, at least negatives some widely accepted beliefs. First, bearing on the traumatic theory that thrombosis follows injury to the intima of the veins, they were not able to corroborate this experimentally.

Allusion is made to Schenck's report to the effect that in 40 cases of thrombosis 58 per cent followed pelvic tumor operations. McLean and Barrett record 33 cases in 1610 laparotomies; 9 were cases of femoral embolism; 5 of pulmonary embolism, 2 of which were followed by lung abscess; 2 of liver embolism, followed by abscess; and 2 of cerebral embolism, followed by death. Forty per cent of these cases followed prostatectomies or pelvic operations. In a series of 1977 operations performed in the last two years there were 8 emboli, 6 of which were fatal. All were pulmonary. In but one of these cases was there evidence of a thrombosis previous to the embolus. It is well recognized that thrombosis is commoner after septic cases than after those which are clean.

As a rule thrombosis and its following emboli occur between the seventh and the twenty-first day. An explanation somewhat widely accepted to the effect that in abdominal operations the trauma of retractors causes a thrombosis which extends especially through the deep epigastric vessels to the femorals seems to be negatived by the author's experimental work, and particularly by the fact that thrombosis is often seen on the side opposite the one on which traction of the deep epigastric was made. The authors state they have never seen embolism from the long saphenous

and suggest that this is due to the fact that this vessel is not subject to the pounding of the femoral artery.

As for treatment of the thrombosed femoral vein, there is little to be done aside from rest in bed. Nor is the prognosis in regard to complete disappearance of swelling particularly good. The authors advise keeping the patient in bed for three weeks, as thereafter the danger of embolus is reduced to its minimum. As to the typical pulmonary embolus characterized by acute thoracic pain and great dyspnea, if after the first shock, in fifteen to thirty minutes the patient begins to improve the prognosis is guardedly good, providing there be no subsequent pus formation.

Bearing on a cerebral embolism, which is often cited as the cause of death and rarely proven, they record a case so diagnosed after the operation. The patient lived for forty-two days, with hemiplegia and all the evidence of a cerebral complication. On death there was found a pulmonary embolus, but no sign of one in the brain.

The conclusions of this study made by McLean and Barrett are to the effect that thrombosis is not caused by endothelial trauma, but that it is due to infection and necrosis, or some toxin derived therefrom; that it is encouraged by slowing of the blood stream; that the harm done by an embolus is incident to its size, its point of lodgment, and the strain placed upon the heart; that those thromboses which are obvious and apparent are not the ones which usually cause serious trouble; and that embolus is avoided by measures taken against thrombosis. What these measures are they do not state, but many surgeons have recorded their belief to the effect that the number of postoperative thromboses has been distinctly lessened by getting patients early out of bed after operation.

A contributing factor to the reduction of the incidence of this complication is undoubtedly cleaner general surgery. That the clotting is due to an infection not of the usually recognized type, saving in those cases which go on to suppuration, remains the generally accepted belief. There are many reasons given as to why thrombosis should exhibit a peculiar affinity for the femoral veins, none of them entirely convincing.

PROSTATECTOMY.

Prostatectomy is a life-saving operation and under modern conditions is attended by an almost negligible mortality. Its safety and value are so well established that the profession at large has almost forgotten the period when this procedure was regarded as one of last resort, was undertaken as a rule only when the kidneys were so seriously damaged that their complete recovery could not be looked for, was attended by a heavy mortality, and was frequently followed, when patients did recover, by a fistulous tract.

Young (*Surgery, Gynecology and Obstetrics,* May, 1923) reviews briefly the steps by which, aside from the operative technique, he became a major factor in making this procedure so safe that its value and desirability have been universally accepted by the profession and by the laity. He notes that "Renal impairment is proportional (roughly) to the back pressure in the ureters. This is characterized by dilatation of ureter, pelvis, and calyces, and thinning of renal cortex. It is most common and most pronounced with large residuals in patients never catheterized. It is less pronounced in large residuals intermittently catheterized. Marked impairment may occur with residual urine less than 400 cubic centimeters, but not so frequently. It occasionally occurs with small residuals (less than 100 cubic centimeters), probably due to frequent and prolonged urination during which the ureters are closed and pelvic distention occurs. The presence of infection may greatly accelerate the renal lesion, and severe cystitis, especially if associated with vesical calculus, adds to the vesical spasm and consequent back pressure. The improvement which follows vesical drainage through a catheter is remarkable, and the rapid fall in

retained urea in the blood and the rise in output of phthalein by the kidneys is one of the most splendid of therapeutic results.

"The amazing way in which patients in chronic uremia with severe mental and gastric disturbance and general systemic breakdown, high blood urea, and no phthalein, may be carried through the post-catheterization crisis to a gradually improving renal function until prostatectomy can be safely done under gas anesthsia is one of the triumphs of modern medicine."

Young states that it is not possible to establish a standard below which operation should be refused, even when the phthalein cannot be raised to 30 per cent; if the urea is not over 0.50 gramme per liter, and there are no uremic symptoms and water can be taken in large quantities, the operation is comparatively safe. It is, however, quite true that the mortality rate is in inverse proportion to the phthalein figure, and therefore, unless there be reason for haste, operation should be postponed until the phthalein elimination has reached 30 or 40 per cent.

He observes, and this is in accord with general experience, that nearly all cases which have been catheterized are infected, that the sterile cases with slight residual become infected after prostatectomy, and that these cases which had operation after a mild cystitis as a rule do better than those which are previously sterile. About two per cent of his cases developed epididymitis. He does not practice preoperative catheter drainage on slight residual and good phthalein elimination. Where the residual is large and the phthalein low continuous drainage through the urethra and by catheter is supplemented by irrigations twice daily of mild antiseptics. The catheter is changed every three or four days. As the result of this continuous drainage colon infection usually develops. In case of irritable urethra, suprapubic drainage may be employed. Young so employed suprapubic drainage in only one per cent of 1049 cases. It has a distinct mortality, to-wit, something over two per cent. Young states that in the last year and six months his entire admissions at Johns Hopkins Hospital have been 400, and among these 12 died without having been subjected to prostatectomy. Three of these died on the second day, five within six days of entrance. One died of pulmonary embolism. He states that in some cases bladder drainage seemed to hasten the onset of uremia. Other cases were intolerant to the catheter and developed infection, and at autopsy showed prostatic abscess or pyonephrosis.

Young especially accentuates the need of forcing water on such cases as have high blood urea, to-wit, 0.75. He gives from 7 to 10 liters daily, using all avenues. He employs the same treatment in cases of renal infection, this especially in acute pyelitis. He holds that nearly all cases can be conditioned for a perineal prostatectomy without a first-stage suprapubic drainage.

He observes that "Occasionally one sees a very old or feeble man who is doing very well with a catheter life, to which he is well accustomed, and it seems safer to leave him alone. About one per cent of the cases are sent home without prostatectomy, which as a whole has now a much lower mortality than the catheter life."

As to arteriosclerosis, he observes that it is so common as to be almost negligible, except when it is most pronounced, nor is he deterred from operation by a history of apoplectic strokes. He records ten cases giving such a history, all of which passed successfully through the operation. In his last series of 198 cases without death, there are five with a pressure of over 200. He had, however, in all his cases two hemiplegic deaths occurring in high-pressure patients. In this type he uses straight ether anesthesia. One case died of pulmonary embolism during preparation for operation; six died from this cause after operation.

Progress in Therapeutics

Medical Therapeutics

The Treatment of Gastric and Duodenal Ulcers.

The *British Medical Journal* of February 10, 1923, in an editorial on this subject, states that ten years of experience in the treatment of gastric and duodenal cases forms the subject-matter of an address by Moynihan: it embodies a total of 718 cases, 531 of these being duodenal and 164 gastric ulcers. Only chronic ulcers are included in the category, and a clear line of distinction is drawn between the chronic and the acute types of the lesion. The differentiation is important because the problem which each presents is vitally different; whether viewed from a clinical or an operative standpoint, there is a very clear and evident distinction. As Sir Berkeley points out, it is the chronic ulcer which gives us anxiety, for it is in this variety that we meet with the disastrous complications of hemorrhage, perforation, and malignant degeneration.

The problem of the etiology of chronic gastric and duodenal ulcers remains unsolved; it is assumed that an acute ulcer may form the nidus in which the chronic ulcer eventually develops, but such an answer is insufficient. In this connection Sir Berkeley makes no mention of the influence of distinctive types of stomach cells upon the situation and occurrence of the disease, though recent histological work on the "map" method suggests the importance of this influence.

Great interest from the pathological point of view centers around the question of malignant degeneration in the ulcer. There are few who will dispute the possibility of the event, and the instances the lecturer quoted should convince the most skeptical. The recognition of the possibility is of extreme importance, and it naturally forms one of the strongest arguments for surgical ablation of the ulcer. It is refreshing to find that this shrewd observer attaches the greatest importance to the careful interrogation of subjective features. It is well that we should be reminded of this, for the technical nature of many modern methods of investigation is sometimes apt to overshadow the personal subjective factor. An impressive distinction in this connection is drawn between the individual clinical histories of a gastric and of a duodenal ulcer.

Apart from the clinical history, radiological examination and gastric analyses afford the information upon which the diagnosis is eventually based. The visible evidence of *x*-ray examination will probably continue to be our most valuable mechanical aid. The demonstration of a "crater" is proof positive, but there are many who will not share Sir Berkeley Moynihan's confidence in the "niche" and the "notch"—the latter especially is open to suspicion, for its interrogation may be read as a localized contraction of the stomach, and it has been demonstrated as a physiological condition. Fractional gastric analysis as an aid to diagnosis has displaced other methods of gastric analysis, but the method has not yet been brought to the pitch where its evidence can be regarded as more than confirmatory. The curves obtained from a fractional gastric analysis may afford suggestive information, but while a positive result is of value, nothing can be assumed from a negative reading. This is especially manifest in duodenal ulcer—in hyperchlorhydria the curve of "terminal ascent" may only be met with in a small proportion of the cases. The method, as yet in its beginnings, promises, however, to be of increasing value.

A considerable proportion of the address is devoted to a consideration of the curative value of medical treatment. Sir Berkeley Moynihan claims that he is a physician who has been led by force of circumstances to practice surgery, and it seems that he has

stated the arguments of the relative values of medical and surgical treatment with remarkable fairness—in fact he has given the former a consideration which should prove a stimulus to the physician. He has demonstrated to his own satisfaction that the chronic gastric ulcer is capable of spontaneous cure, for the healed scar has been apparent *post mortem,* but he asks the physician to supply the explanation and to initiate the successful treatment. Until this distant goal (we had almost said "Utopian," but there is surely nothing chimerical in the possibility) is reached the claim of the surgeon as expressed by Sir Berkeley Moynihan is that the ulcer-bearing segment of the stomach should be removed. The pleas which he brings forward are extremely cogent, and it is difficult to raise any strong objection to them; one aspect of the argument for operation, however, demands a passing notice. Sir Berkeley claims that the extraordinarily low mortality associated with the operation is one of the strongest arguments in its favor, but it is here that the personal factor bulks so largely. The operation of gastrectomy will always be one of the most serious operations of surgery, and judgment and exquisite surgical technique are demanded if uniformly successful results are to be attained. To an onlooker it may seem that with such an extraordinarily low associated mortality the operation must be one of simplicity and inherent safety—and so it is in the hands of an expert, but any error of technique or judgment is likely to be followed by disaster. A word of warning on this point might with advantage have been uttered.

There is one last feature connected with gastrectomy which calls for mention. Experimentally the operation has been followed by a curiously large proportion of acute jejunal ulcerations. This is especially so in the dog, where the active acidity of the gastric contents is badly tolerated by the intestinal mucosa. It would be interesting to know whether, when the operation in man is done in the presence of hyperchlorhydria, there is a greater liability to this complication. We observe that the lecturer records its occurrence in several duodenal cases, and this is the explanation which suggests itself. Experimentally a very long interval of time sometimes elapses before the jejunal ulceration manifests itself; have we any reason to fear its development as a late result in gastrectomy? Possibly it is yet too soon to say. "It is wonderful what a different view we take of the same event four and twenty hours after it has happened."

Treatment of Leucorrhea.

SHANKS, in the *American Physician* for February, 1923, states that the remedies offered for leucorrhea are many. Chapelle, of Paris, claims good results from the use of yeast in treating leucorrhea, which a number of physicians have also observed. He advises the use of yeast in a pure, desiccated form, which may be incorporated in cocoa butter and made into suppositories, and placed in good position on going to bed, or it can be made into a mixture by mixing it with glycerite of starch and retained with an absorbent cotton tampon, or again treated by dipping a sponge of cotton in a paste composed of water and yeast. This method of treatment is absolutely harmless, as it is perfectly safe to introduce from one to two teaspoonfuls or more of the paste and retain it in the vagina during the night. The sitz-bath is often beneficial in cases due to slight pelvic congestion. It should be taken before bedtime and continued for about twenty minutes.

The vaginal douche is used for various purposes. The douche should be taken at a temperature of about 115° F., copious, about four quarts of warm water used. The flow should continue for about fifteen or twenty minutes, the patient being in the recumbent position, with the buttocks slightly elevated. The most important medicines to use in douches are potassium permanganate 1:8000, iodine, bichloride of mercury 1:3000, phenol 2 per cent, protargol 2 per cent, argyrol 5 per cent, etc. Astringent douches are employed where the

secretions are excessive. The best drugs are alum, zinc sulphate, plumbic acetate, etc. Antiseptic intra-uterine douches may have to be used for certain conditions, in which case they should be introduced through a return-flow catheter and should be administered by the physician only. The intra-uterine catheter should be carefully sterilized by boiling, and should be carefully introduced after a proper speculum has been inserted in the vagina, and the cervix retained in position by volsellum forceps. The vaginal canal should have been previously cleansed and washed out, and the cervix cleansed by sponges of cotton saturated in some antiseptic. Tampons of ichthyol, mercury, boroglycerin and hydrastis are of great value in treating leucorrhea. He has had great success in using an antiseptic cone, consisting of quinine bisulphate, zinc sulphate, and boric acid. This cone is made up in the shape and in the form of a suppository. Constitutional and internal treatment should consist of attention to personal hygiene and life in the open air, cod-liver oil (if patient is under weight), syrup of iodide of iron, Fowler's solution, etc.

Sleep and Sleeplessness.

In the *British Medical Journal* of February 10, 1923, SMYTH states that most people suffer from insomnia, psychic in origin, at some time of life, and as every man can best fit his own hat, so most people have a way of their own for dodging unpleasant ideas, and what helps one person may not help another.

He says we have all met cases of psychic origin where, despite every artifice, the demon of insomnia had the best of it. Then comes the time for judicious drugging and external treatment. For the pressing need of sleep he has found that an hour's gentle massage at bedtime, immediately preceded by 3 grains of barbital, and at the end of the massage period 10 grains of aspirin in hot milk, give good results. Massage sometimes irritates, and when this is so must not be continued. Reading by a nurse is sometimes a fair substitute, provided her voice is soft and manner of reading monotonous.

In cases of weak heart 25 grains of chloralamid in an ounce of brandy may be given instead of the barbital, repeating the dose in three hours if necessary. With all its drawbacks he has found paraldehyde in 2-drachm doses with yolk of egg very effective in bad cases. Others doubtless have found other drugs quite as good.

When the insomnia is due to cerebral unrest originating at a distance from the cortex, and with the impulses conveyed thereto by the nerves of sensation or those of the special senses, the remedies are obvious. We remove when possible the causes of pain, the sources of cold, heat, sounds, and so on; and of course in actual painful conditions, in cases not complicated with renal or bronchial defects, opium will suggest itself.

A case of insomnia that impressed him greatly was one due to neuralgia of the extremities. Luminal in 5-grain doses was the only drug that not only relieved the pain but gave several hours of refreshing sleep. The drug can be given dissolved in hot water or in a cachet. It is best to begin with doses of 2 to 3 grains and repeat three or four hours later in the night if necessary. Cases of insomnia due to pain require careful watching. Many such patients in time lose the sense of pain measurement, and undoubtedly exaggerate the degree of pain felt in order to get stronger and stronger remedies. It is an unsafe policy to leave drugs likely to poison within the reach of such patients.

Heart Disease in Children.

PARKINSON, in the *Archives of Pediatrics* for February, 1923, says that it is impossible for him to write anything on this subject without mentioning the urgent necessity of providing suitable means of preventing heart strain during the prolonged convalescence from carditis. At least six months should elapse after carditis before the child may be allowed to take up

a normal life, and it is obviously impossible to keep children in hospital for such a long period, the result being that the child is sent home after six or eight weeks of hospital treatment and is allowed to resume its normal life. The results of this, at least among the laboring classes, are disastrous. Many of these classes have large families and small means, and the children may be left to look after each other while the mother is out at work; is it not then a natural consequence that the heart of a convalescent after a rheumatic attack and which is only recovering from a myocarditis will be strained, and cardiac dilatation ensue? It seems that if it were possible to institute country homes to which these children could be sent for some months, and guarded from overexertion, while if necessary they might continue their education, we should do much to prevent chronic heart disease. He thinks such homes are as necessary for children after acute rheumatism as are sanitariums for consumption, and believes that in time their benefits would be evident in the lessening of sufferers from chronic heart disease.

Pediculosis Pubis.

In the *Lancet* of February 3, 1923, under "Modern Technique in Treatment," BARBER states that infection with this variety of louse is very common. Those who become infected often diagnose their complaint correctly, and fly to the traditional blue ointment—sometimes thereby provoking an acute mercurial dermatitis. It must be remembered that, although the pubis is the region usually first involved, the parasites soon invade the axillæ, and in hirsute persons the lanugo hair of the whole trunk and limbs may harbor them. More rarely the eyelashes and beard become infected. Apart from the irritation it occasions, the pediculus pubis may in certain persons produce characteristic oval bluish spots, which are macules (maculæ cæruleæ) and do not fade on pressure. At one time they were thought to be symptomatic of typhoid or typhus fever. They are caused, as Duguet's experiments with crushed crab-lice showed, by the pigment introduced by the parasite when feeding, but it would seem that only certain affected persons develop them. Although the crab-louse—like the acarus—is often acquired through indiscriminate sexual intercourse, it may also be transmitted by w. c. seats and articles of clothing.

Blue ointment is not to be recommended owing to the risk of mercurial dermatitis. The method he usually advises is to apply pads of lint, soaked in a 1-in-40 solution of carbolic acid and covered with oil silk and bandage, to the affected regions for an hour or so. On removal of the pads the parasites are found dead and adhering to the lint. Subsequently it is wise to employ a weak mercurial ointment for a few days, lest any ova should have escaped destruction by the carbolic acid. Petroleum or xylol is equally efficacious and kills the parasites instantly, but he has never yet failed to cure a case rapidly by means of a carbolic solution and a weak mercurial ointment. The beard may be treated in the same way, but when the eyelids are affected it is best to pick off the parasites and as many ova as possible with forceps, and to apply yellow oxide of mercury ointment continuously until a cure is obtained.

Essential Enuresis.

WALKER, in *The Practitioner* of London for February, 1923, states that the habits and diet of the child should be carefully considered and definite rules laid down. As the majority of children suffering from incontinence belong to the "highly strung," intelligent, excitable class, an attempt should be made to counteract all anxiety, excitement, or mental strain. The mere regulation of the amount of homework permitted or the interdiction of examinations is sometimes sufficient to alleviate matters. Physical exercise and outdoor games, unless excessive, are beneficial. Massage, cold baths, douching and subsequent rubbing down with a rough towel—in a word, anything that is likely to improve the

muscle-tone and general health—is to be encouraged. Late hours, entertainments, and excitements are, on the other hand, to be interdicted. No great restriction need be placed on diet, beyond the forbidding of articles likely to cause gastrointestinal disturbance or to result in the excretion of irritating products in the urine. The principal meal should be taken in the middle of the day, and only light food taken before going to bed. At least an hour should elapse between the taking of the evening meal and going to bed, for the kidneys secrete more rapidly after a meal, and the urine is more liable to contain irritating products during this period. Coffee or tea should not be given, for caffeine tends to increase the excitability of the bladder and encourage automatic micturition. The amount of fluid taken during the day need not be regulated, but drinks should not be allowed immediately before retiring.

In those cases in which there is a definite weakness of the bladder sphincter, and even in other types of cases, great benefit is often to be obtained by means of deliberate training of the bladder. The child is encouraged during the day to hold his water for longer periods, and learns thereby that immediate submission to the call to micturate is unnecessary. Such experience is not without influence on his subconscious mind, and reacts favorably by night as well as day. The mattress on which the child sleeps should be firm, the bedclothes light, and the room kept at a sufficient temperature to prevent chilling. Sometimes, when dealing with an irritable bladder in a child who shows precipitate micturition during the day, it is beneficial to raise the lower end of the bed so as to relieve the sensitive trigone from pressure, and allow the urine to collect in the upper part of the bladder.

A great many drugs have from time to time been favored in the treatment of enuresis, amongst others belladonna, potassium bromide, nux vomica, antipyrin, extract of rhus aromatica, hyoscine hydrobromide, and thyroid extract. Often these drugs have been used indiscriminately, and without any reference to the type of case under consideration. It is obvious that to exhibit a depressant such as potassium bromide to a child whose sleep is already so profound that intercommunication between his higher and lower centers is lost and automatic micturition established, is the very worst form of treatment that can be imagined. Similarly, the use of thyroid extract in a child of the excitable hyperthyroid class is equally disastrous. It is only by careful consideration of the class of case under treatment and the kind of sleep to which he is subject, that satisfactory results can be obtained from drugs. Taken as a whole, the drug which is most often found useful is tincture of belladonna, beginning with 7 minims t. d. s. and rising up to 20 or more. During the period of treatment with larger doses of belladonna, the child should be under strict medical supervision to prevent the danger of an overdose. Thyroid extract, strychnine, and other excitants should only be used when dealing with the apathetic, atonic class of case.

Local treatment in young children should be avoided as much as possible. In older children it is more likely to be effective, but whether this is due to any real local action or to suggestion is often difficult to decide. Catheterization, dilatation, and instillation of silver nitrate in the posterior urethra have all been used at times, and have claimed success. In the same category of treatment must be placed the somewhat barbarous method of ligature. This consists of closing by means of a ligature or collodion the end of the prepuce, so that it is distended at the moment of involuntary micturition, and the patient awakened by the pain. A less brutal and more ingenious modification of this principle has been devised by Genouville, who, in order to wake the child at the moment of involuntary micturition, arranged a metallic network in the bed which when moistened completed an electric circuit and caused the sounding of a bell.

Finally, amongst the local methods of treatment must be mentioned electricity. The most usual method of employment is

as follows: A urethral electrode is used, consisting of an insulated sound terminating in a metallic, olive-shaped button. This electrode is introduced into the prostatic urethra, and then withdrawn sufficiently to cause the metallic button to be pressed against the membranous urethra. It is then connected with the negative pole of an induction coil, the positive pole of which is linked up with a large abdominal electrode. The intensity of the current should be such as to cause no distress to the patient, the sitting lasting five or six minutes and being repeated every three or four days. When electrical treatment is applied to small children, intra-urethral methods are unsuitable. In such a case the electrode, instead of being introduced into the urethra, is merely pressed against the posterior part of the perineum in front of the anus. In addition to faradic, galvanic electricity may be employed, or in the case of adult women the high-frequency current. The exact method in which electricity acts in such cases is a matter for speculation. When the sphincters are atonic, it is obvious that excitation by means of electrical stimulation is likely to be beneficial. In older children, in whom other treatment has previously failed, "electrical magic" may have a profound psychological effect.

The Comparative Physiological Activity of Thyroid and Thyroxin.

HUNT, in the *Journal of Pharmacology and Experimental Therapeutics* for April, 1923, states that further work on the acetonitril test for thyroid (the increased resistance of mice to acetonitril after the administration of extremely small amounts of thyroid gland or of "iodothyrin" or of "thyroxin") has fully confirmed previous conclusions as to the specificity and delicacy of this test; no iodine compound other than that of the thyroid has been found which gives a reaction at all comparable. Previous work as to the parallelism between the iodine content of thyroid and physiological activity (as determined by the acetonitril test and also by the effects upon growth) has been confirmed; physiologically "inactive" iodine has not been found in any normal thyroid gland.

Administered by mouth in equi-iodine doses thyroxin has invariably proved less active than normal thyroid both by the acetonitril test and by the effects upon growth. That this lower activity of thyroxin is not due to an assumed greater destruction of thyroxin in the intestinal tract is shown by the fact that thyroxin injected intravenously is also less active than thyroid containing an equal amount of iodine.

It is concluded that thyroxin does not fully represent the physiological activity of the thyroid gland when administered as a drug.

The Roentgen-ray Treatment of Toxic Goitre.

MEANS and HOLMES, in the *Archives of Internal Medicine* for March, 1923, believe that the data which they present show that the Roentgen ray probably has a beneficial effect in toxic goitres, and that for that reason it has its place in our armamentarium for treating these states.

About two-thirds of the patients with exophthalmic goitre so treated show either recovery or improvement coincident with the treatment. The remaining third neither improve nor grow worse.

In exophthalmic goitre, when treated by the Roentgen ray, if good results are not secured in a few months, surgery should be employed. Prolonged Roentgen-ray treatment in patients showing no response is undesirable. This is a fact which has been impressed on them particularly in their recent work. They have not emphasized it before, and, therefore, do so now.

Some patients with exophthalmic goitre who are not cured by the Roentgen ray are, perhaps, made better operative risks by it. A combination of the two forms of treatment may sometimes accomplish more than either does alone.

In toxic adenoma there seems to be a similar improvement to that noted in exoph-

thalmic goitre, but so far they have used it only with patients who have refused operation. In toxic adenoma, in contrast to exophthalmic goitre, surgery probably removes the actual cause of the disease, the adenoma. The indication for surgery would, therefore, seem more definite than in exophthalmic goitre. Even in toxic adenoma, however, in certain cases that are too thyrotoxic for safe operation, the Roentgen ray may be used to advantage.

To make a proper use of the Roentgen ray in the management of toxic goitre of either variety, its limitation should be recognized and it should be intelligently correlated with other therapeutic measures as the individual case may demand.

The Laxative Action of Yeast.

In the *American Journal of Physiology* for March, 1923, MURLIN and MATTILL state that the existing literature on the effectiveness of yeast as a laxative is conflicting, some authors finding it an important remedial agent in enteritis (diarrhea), others reporting relief from constipation.

By true laxative action in the investigation is meant either an easier evacuation on account of increased moisture in the stool or more complete evacuation on account of stimulation to peristalsis or greater bulk of residues.

The plan of investigation followed contemplated the use of both human and animal subjects. In the first series ten students were placed on a nearly constant diet alternately in periods with and without yeast. The stools were collected, samples dried to constant weight, and percentage of moisture and solids computed.

In the second series five human subjects were placed on a more rigidly constant diet, and in the same manner periods with yeast added alternated with periods in which no yeast was used. In this series not only were the stools examined with reference to the percentages of water and solids, but were analyzed also for total nitrogen and phenols. The urine also was analyzed for total nitrogen, phenols both free and conjugated, and uric acid. Indican was determined qualitatively.

Two dogs were used for the third series, in order to eliminate any possible psychic effect and in order to impose an absolutely constant diet. Nitrogen output was studied as a measure of protein utilization.

In the first series no evidence was obtained of increased moisture content as the result of taking yeast. There was, however, a measurable increase in the bulk of stool, which persisted for several days after the ingestion of yeast was stopped. Several of the subjects were compelled to evacuate two or three times a day when three cakes of compressed yeast (one before each meal) were taken.

In the second series a laxative effect is proved both by increased weight in the great majority (13 out of 15) of the tests and increased moisture in two-thirds of the tests. In the great majority of the tests also there was not only an increase in the absolute elimination of nitrogen, but an increase also in the percentage of nitrogen in the dried stool. Evidence here is found for the utilization of yeast protein, as also in the values for total nitrogen in the urine.

The estimation of phenols in the feces and urine indicates that putrefaction is somewhat diminished by the ingestion of yeast.

The uric acid of the urine shows a marked increase when three cakes of compressed yeast were eaten each day, and becomes even higher in the control period immediately following.

Boiled yeast does not produce so much laxative effect (moisture and weight) as raw yeast. It is more easily digested than raw yeast.

Dogs can digest and utilize yeast protein to such an extent as to obscure any tendency to increase the excretion of nitrogen by the bowel. Four cakes of yeast gave a marked laxative effect (softer movement) when fed to dogs of 9 and 10 kilos on a perfectly constant diet which otherwise was slightly constipating.

Tuberculin Tests in Infancy and Early Childhood.

WAHL and GERSTENBERGER, in the *Archives of Pediatrics* for March, 1923, state that a study of the tuberculin tests performed upon exposed, suspicious, or actively tuberculous individuals of the clientele of the Babies' Dispensary and Hospital of Cleveland from the year 1907 to September, 1921, showed the following findings:

1. A slight increase of positive tests in the females over the males, the former giving a positive percentage of 61, and the latter a positive percentage of 54.

2. An increase in the percentage of positive reactions corresponding with the increase in age, being 35 per cent in infants under six months of age, and 87 per cent in young children between 36 and 48 months of age.

3. Of the different races and nationalities, the colored race gave the highest percentage of positive reactions.

4. Patients exposed to two or more sources of tuberculous infection showed a higher percentage of positive reactions than those exposed to only one.

5. When only one source of contact existed for a patient, the mother was found responsible for the highest percentage of positive reactions, a brother or sister for the next highest, and the father for the lowest of the group.

6. Children giving a negative history of exposure showed only 15 per cent positive reactions as against 44 per cent for those having a positive contact history. In other words, 44 per cent of the children giving positive tuberculin tests gave a definite history of tuberculous contact, whereas of those giving a negative history of exposure only 15 per cent reacted positively.

7. Scrofula gave the highest percentage of positive reactions and was followed by pulmonary tuberculosis, tuberculous adenitis, tuberculous osteomyelitis, tuberculous meningitis, and pulmonary miliary tuberculosis.

8. By using the intracutaneous test, controlled by checking with a known case of tuberculosis, a higher percentage of positive reactions can be obtained, especially in cases of tuberculous meningitis and pulmonary miliary tuberculosis, than has been usually reported.

9. The intracutaneous tuberculin test, 0.1 cc of a 1:100 solution, is in practically 100 per cent of the cases more sensitive in its reaction than the tuberculin tests performed either with the "tattoo" or the "burr" methods. Likewise, the test performed by the "tattoo" method is more sensitive than the "burr," although the former is more difficult from a technical standpoint.

10. The intracutaneous test with a 1:1000 solution has always been found positive even when stronger dilutions of 1:10 and 1:100 were used. The reactions with the stronger solutions have been in general more marked, but the reaction with the 1:1000 dilution has been sufficient to convince them to choose it as their standard in performing the intracutaneous test routinely.

Syphilitic Infection in Pregnant Women.

In the *Johns Hopkins Hospital Bulletin* for March, 1923, MOORE states that a critical study of the clinical and experimental evidence in the literature shows that in all probability neither Colles' law nor the theory of the paternal transmission of syphilis directly to the fetus is valid.

The clinical data supplied by his study of 178 pregnant women with positive blood Wassermann reactions and 22 non-pregnant mothers of syphilitic children support this belief.

Forty-four of these women, or 22 per cent, had outspoken lesions of early or late syphilis at the time of admission. Of the remainder, syphilis was proved or strongly suggested by the history, physical examination, response to treatment, or subsequent course, or a combination of these factors, in 72 per cent. In only 21.5 per cent of the total 200 cases, therefore, were all evi-

dences of syphilis (except a positive blood Wassermann) lacking.

This study also demonstrates that the factor of pregnancy may cause striking deviations from the usual course of syphilitic infection. If impregnation and infection approximately coincide, or if infection occurs during the course of pregnancy, the patient may develop the usual early manifestations of syphilis, which are, however, much milder than if she is infected independently of pregnancy. Of those pregnant patients in whom the probable date of infection could be compared with the type of lesions present, approximately one-half behaved toward infection in this manner.

A slightly larger proportion of women, if infected with syphilis at about the time of impregnation, fail to develop any of the usual early lesions of syphilis. Under these circumstances it is fair to assume that pregnancy is the factor which suppresses the lesions of the disease.

In a few patients (in this series, three of 200 women) the response to infection acquired at the beginning of or during pregnancy is markedly altered. The usual time relations between primary and secondary syphilis are much prolonged; on the other hand, the interval between early syphilis and tertiarism may be much shortened, and grave lesions of a tertiary type may appear early in the course of the disease.

The protection against the early lesions of syphilis afforded by pregnancy may persist over a long period of years, and possibly for a lifetime. Spontaneous cure of syphilis seems in a few instances to have been the ultimate result. In those women of this series who developed late syphilis, the viscera, and particularly the cardiovascular apparatus, were especially prone to involvement; whereas tertiary lesions of the skin or bones and neurosyphilis, either clinical or asymptomatic, were rare.

It is shown that in 33 of these 200 patients the blood Wassermann reaction gave anomalous results; in 10 per cent of the pregnant women with secondary syphilis the reaction was negative; in the women with latent syphilis it was prone to vacillate markedly without treatment; and in a number of cases a negative or positive reaction during pregnancy spontaneously changed to the reverse after delivery. The possible factors responsible for this condition are briefly considered.

The nature of the mechanism by which pregnancy causes these alterations in the course of syphilitic infection is unknown. Various possibilities are mentioned.

A Safe and Practical Method of Administering Scopolamine-morphine Anesthesia in Obstetrics.

VAN HOOSEN, in the *New Orleans Medical and Surgical Journal* for March, 1923, states that the general applicability of these drugs to all cases, their cheapness, easy portability, simplicity of administration, and freedom from dangerous or disagreeable sequelæ, all help to make them by far the most practical anesthetics in the field of obstetrics. As they are the only anesthetics at all practical for the first stage of labor, or for a prolonged labor, she hopes that this report regarding their safety and practicability will be received by even the most conservative members of the profession and used to extend more widely that much to be desired of women—painless childbirth.

In 2023 deliveries there were 48 (2.3 per cent) full-term still-births; 20 (2 per cent) premature births; 3 (1/10 per cent) maternal deaths.

Analysis of full-term still-births (48): Macerated, 9 (19 per cent); monsters or deformities, 5 (10 per cent); cord anomalies, 8 (17 per cent); disproportion between maternal pelvis and fetal head, 13 (27 per cent); embryotomy for transverse, 1 (2 per cent); breech presentation, 3 (6 per cent); lues in the child, 4 (9 per cent); eclampsia or flu, 3 (6 per cent); cause not assigned, 2 (4 per cent).

Analysis of cause of maternal deaths: eclampsia, 1; septic peritonitis, 1; flu-pneumonia, 1.

In 727 multiparæ delivered, low forceps were used 17 times, mid-forceps were used 5 times, high forceps were used 3 times.

In 877 primiparæ delivered, low forceps were used 98 times, mid-forceps were used 38 times, high forceps were used 21 times.

Pituitrin was not given to primipara.

In 727 multiparæ, 16 had severe hemorrhages.

In 877 primiparæ, 14 had severe hemorrhages.

All hemorrhages were controllable.

In 1604 deliveries, 53 babies required resuscitation, 30 primiparæ, 23 multiparæ; 29 mothers had had not more than 4 doses; 20 mothers had had not more than 8 doses; 3 mothers had had not more than 12 doses; 1 mother had had not more than 15 doses.

No resuscitation was required in 20 mothers who had more than 15 doses.

The largest number of doses given any mother was 31.

In 727 multiparæ delivered, 49 per cent had not more than 3 doses or anesthesia length 14 hours; 11.5 per cent had not more than 9 doses or anesthesia less than 8 hours; 7 per cent had not more than 9 doses or anesthesia less than 14 hours; 4 per cent had not more than 9 doses or anesthesia less than 14 hours.

In 877 primiparæ delivered, 23.5 per cent had not more than 3 doses or anesthesia length 3 hours; 45 per cent had not more than 6 doses or anesthesia length 8 hours; 20 per cent had not more than 9 doses or anesthesia length 14 hours; 11.5 per cent had not more than 9 doses or anesthesia length 14 hours.

In 1604 deliveries, 1.25 per cent had more than 15 doses.

As to the position and conduct of the patient: In the first half of the first stage, sleeping quietly. In the second half of the first stage, during a contraction, restlessness increasing to the end of the second stage. Between contractions, sleeping quietly.

Position and conduct in the second stage: During the descent of the head, sitting upright with the leg crossed tailor fashion. Head on the perineum, lying on the side and bearing down with each contraction.

She gives these rules for conduct while alkaloidal anesthesia and analgesia is being produced:

1. Finish all preparations before the first dose is given.
2. Keep room dark and quiet.
3. Allow no one in the room with the patient.
4. If pains are severe or labor advanced give nitrous oxide gas during pains for one-half or three-quarters of an hour.

Rules for conduct in maintaining alkaloidal anesthesia and analgesia:

1. Allow the patient plenty of water, but *no* food.
2. Allow the patient to do as she desires unless it threatens to be injurious.
3. Do not question or converse with the patient. It is useless to ask her to bear down or refrain from it.
4. After the first three doses noise and light disturb the patient very little.
5. Do not give ether or chloroform in addition to the alkaloidal anesthesia for the application or use of forceps.
6. Put the patient under ether or chloroform to perform version, pubiotomy, or repair extensive lacerations.
7. If the patient is unmanageable discontinue the scopolamine, and in two hours she will be in normal mental condition.

Rules for putting the patient into restraints for delivery:

1. Rupture of the membranes in multiparæ.
2. Appearance of the head at the vulva in primiparæ.

Infant Feeding.

In the *Archives of Pediatrics* for February, 1923, BURNET points out that even when cow's milk is chosen as the substitute for breast-feeding many fallacies are allowed to creep in as regards its preparation. As a general rule the milk has to be diluted so as to reduce the protein. Plain water is the best diluent. Barley water and other made-up diluents are not to be recommended; these are quite unnecessary and sometimes do harm. In most cases sugar is ordered. This is by no means necessary

for every infant. In by far the larger number of his successful cases no sugar was added at all, and yet a steady gain in weight took place. In some, where sugar was added, it had to be stopped as it gave rise to digestive trouble. In any case there is absolutely no need to order milk sugar. It is a great fallacy to suppose that it is better than cane sugar for infant feeding. Indeed, he has time and again encountered cases in which the use of milk sugar seemed to be the true cause of the indigestion from which the infant brought for consultation was suffering. Certainly it should never be prescribed in cases in which the digestion is upset, and as he has pointed out it is better not to order it at all in any case.

Another source of fallacy is found in the use of cream. This he rarely, if ever, finds it necessary to prescribe. He prefers to use a good milk in which there is a proper amount of fat. Cream is often the cause of indigestion, and a source of considerable trouble in this respect. Many medical men order its addition to milk in order to overcome the constipation from which the infant is suffering. If too much cream is given the constipation may be actually aggravated, and this he has found to be the case in several instances. An infant was brought to him as it was suffering from chronic constitpation. At the time the mother was adding a full teaspoonful of cream to every feed. He advised her to stop it altogether and substitute fluid magnesia, at the same time altering somewhat the strength of the feed. The result was quite satisfactory. There is now a regular natural motion every day. He believes that in this case the cream was only tending to aggravate the condition.

In this article he has strongly advocated simplicity in infant feeding because he believes in it. It yields results, and that is the all-important matter. To be successful in infant feeding it is necessary to be sure of one's ground. Experience has taught him what methods to adopt and what to avoid. He is convinced that any one who adopts the method advocated in this article will find that his results are beyond all expectations. Because the method suggested is simplicity itself it may not appeal to some, but nevertheless it deserves to be given a thorough trial even by those who are skeptical of any method which does not involve elaborate calculations and complicated directions.

Artificial Pneumothorax.

PERKINS and BURRELL, in the *Lancet* of March 10, 1923, state that it will be seen from the cases which they report that artificial pneumothorax may be of value in abscess of lung, bronchiectasis, hemoptysis of unknown origin, and recurrent pleural effusion. In abscess of lung the success of artificial pneumothorax evidently depends on the presence or absence of adhesions. Where these are absent artificial pneumothorax is sufficient to effect a cure and render a severer operation unnecessary. Considering the uncertainty of discovering the abscess cavity it is certainly to be preferred to drainage. When the abscess is superficial the presence of adhesions may lead under pneumothorax to its intrapleural rupture, necessitating drainage of the pleura. If the adhesions are wide-spread they may stand in the way of complete collapse and prevent success, necessitating thoracoplasty. But even so, they advocate artificial pneumothorax as routine procedure on the ground that it may be sufficient in itself, and, where not, that the symptoms are relieved and the general condition of the patient improved, enabling him better to face the severer operation.

Success in bronchiectasis, as in abscess of the lung, depends on adhesions, which in two of their cases led to disappointing results, and in two cases rendered the induction of pneumothorax impossible. One of their cases, however, showed that artificial pneumothorax may be completely successful when prolonged (two years), and the failure in one case they attribute to insufficient length of treatment. This view is upheld by two cases in which the treat-

ment is still being continued with results beneficial and hopeful. In the cases of recurrent hemoptysis and chronic effusion success was striking.

Enuresis in Children.

In the *Archives of Pediatrics* for March, 1923, SAXL and KURZWEIL state that having tried all the mentioned methods they will try to give a concise description of the treatment as used by them. First and foremost, they standardized certain rules and regulations pertaining to all cases of enuresis which must be carefully observed by the parents and the patient. For the sake of clarity, they have combined these rules and the explanations and reasons for their use:

No coffee, tea, cocoa, or spirituous liquors. The reason for this must appear self-evident, because the first three mentioned all contain caffeine, which is a well-known diuretic. Alcoholic beverages also act as diuretics by irritation and stimulation of the renal parenchyma.

No fluids, of any nature, four hours before the hour of retiring. In addition, they insist that the supper should consist of solid food at a stated time, and emphasize the fact that the child *must void* before retiring. They do this in order to have the bladder emptied at bedtime, and so they are sure that the diurnal specimen has been voided.

Hydrotherapy, which consists of a cold friction rub to the chest, sides, and lumbar spine, is sometimes advised in older children in order to relieve the hyperemia and congestion of the internal organs.

Elevate the foot of the bed one or two inches from the floor. This is done to allow gravity to aid by the urine flowing against the bladder vault rather than the trigonum, where it acts as an irritant.

Try to have the patient sleep on the right side and not on the back. Congestion of the spine results from the latter posture and is avoided in the former. This can often be accomplished by the late Professor Jacobi's method of tying a towel around the patient with the knot at the back.

Hands to be kept out of coverings. To prevent subconscious friction of the genitals.

Take prescribed medicine regularly and exactly as directed.

Patient or parent must present, at each subsequent visit, a written chart of his or her progress. They require this so as to encourage enthusiasm on the part of the patient, and, at the same time, they have a chance to estimate the degree of improvement obtained in a given period of time.

They divide therapeutic treatment into several groups according to the etiology.

Under Group I the focal causes, namely, oxyuris vermicularis, masturbation, cystitis, and vulvovaginitis; and Group II, the general ailments, namely, anemia, malnutrition, neurasthenias and neuroses, and neurogenic diseases; they treat each case by the remedies that are well known to the medical profession at large. They, however, mention strychnine as an adjuvant in the cases of anemia and malnutrition, where asthenia and not hyperemia is the etiological factor.

In Group III, when there are endocrine disturbances thyroid and posterior pituitary extract are given because it is well known that the posterior pituitary has a tonic effect upon the bladder musculature.

Group IV is treated symptomatically.

For Group V they have found the use of atropine in large doses to be of considerable assistance. This is given in the following way:

> Atropine sulphate, 0.065;
> Aq. dest. q. s. ad 30.000.
> M. et sig. gtts. as directed.

One drop of the above solution is equivalent to 1/500 gr. of atropine. They start by giving 1 to 3 drops t. i. d., increasing one drop in 24 hours until the desired result is attained. The fact must not be forgotten that while the patient is under the atropine treatment great caution should be taken regarding symptoms of toxemia, which are

disturbances of vision, dry mouth, and rash. The tolerance of children to atropine is greater than that of adults. They state they have often gone as high in their dosage as 1/25 of a grain of atropine t. i. d. without evidence of toxicity. [We would consider this dose definitely toxic.—ED.]

In brief, they feel that the following conclusion is justifiable, namely, that the majority of cases of enuresis are amenable to treatment when diligence and perseverance are patiently observed by the physician.

Relative Value of Surgery and Roentgen Ray in the Treatment of Hyperthyroidism.

RICHARDSON, in the *Journal of the American Medical Association* of March 24, 1923, states that subtotal thyroidectomy is a more effective form of treatment of exophthalmic goitre than Roentgen-ray treatment.

The Roentgen ray has a beneficial effect in certain cases of hyperthyroidism.

This effect is not sufficiently constant to be relied on as the sole form of treatment. In selected cases of exophthalmic goitre, the use of Roentgen-ray treatment under careful control is justifiable for a period of four months, during which the patient receives about five treatments.

If, after four months of treatment, the degree of improvement obtained in general condition and basal metabolic rate does not promise "cure," operation should be undertaken.

The Treatment of Minor Injuries to the Eye.

PARSONS, in the *Lancet* of March 3, 1923, in its columns on "Modern Technique in Treatment," states that the only safe attitude to adopt towards a "minor" injury to the eye is to regard it as a possible source of serious danger, resulting in defective vision or even loss of the eye. Thus, a simple abrasion of the cornea may become infected and lead to the formation of a hypopyon ulcer. He has at the present time under his care a man whose left eye was pricked by a thorn. There was a small conjunctival wound about 10 mm. to the temporal side of the limbus. The tension was normal. In the course of a few days he developed vitreous opacities, and the absorption of blood in the wound revealed the presence of a minute perforation of the sclera through which a bead of vitreous was presenting.

Foreign bodies are frequently blown or otherwise propelled into the eye. In the former case they are most commonly shifted by the predominantly lateral movements of the eye toward the mid-point of the upper lid, where they are caught in the slight groove, known as the sulcus subtarsalis, about 3 mm. from the lid margin. They are easily removed after everting the lid, but this, though a simple procedure, requires some practice. Minute fragments of metal or stone are often propelled on to the cornea, where they become embedded in the epithelium. The commonest are "sparks" off an emery wheel, when grinding tools. These are almost invariably aseptic, but there is never any certainty that virulent pyogenic organisms are absent from the conjunctival sac. The first and most important line of resistance, the epithelium, is broken through, so that these injuries should always be regarded as not improbable sources of serious ulceration. Infection is most liable to occur if a lacrimal mucocele is present, and in such cases is likely to give rise to the most serious form of ulceration—a hypopyon ulcer—owing to the almost invariable presence of virulent pneumococci. The presence of a mucocele is indeed a perpetual menace of such a result, for minute foreign bodies often enter the eye, causing otherwise trifling abrasions, without giving rise to much immediate inconvenience. Particles of stone and abrasions by leaves of plants and twigs of trees are specially liable to cause hypopyon ulcers, partly due to the fact that the offending agent conveys infection, partly to the lacerated type of abrasion, and partly to the constitutional

state of the patient. The evil result most frequently occurs in elderly debilitated patients or alcoholic navvies—in both of which classes the resistance to infection is poor.

In hospital practice, with ideal conditions and skilled assistance, the removal of such foreign bodies is a simple matter. The eye is rendered anesthetic with 2-per-cent solution of hydrochloride of cocaine, the lids are separated by two fingers of the left hand, which also control the eyeball by gentle pressure through the lids, and the foreign body is removed by a spud or discission needle. If very minute, the foreign body may be seen with difficulty. Its position may be indicated by the position of a few dilated conjunctival vessels. These injected vessels are nearest to the site of the foreign body, and as they are radially distributed they act as a pointer to it. Even then the particle may only be visible under good oblique illumination and with the assistance of a magnifying glass or corneal loupe. It may be necessary to use the loupe in removing the foreign body. When the conditions are less favorable it is sometimes possible to remove the foreign body by means of a wisp of cotton-wool, which is less likely to do serious damage to the cornea in the hands of the tyro than the spud or needle.

After removal of the foreign body the eye should be bandaged, and kept clean by frequent irrigation with boric lotion or saline. In most cases the minute abrasion will have healed on the following day, but it should always be inspected, and if there is the slightest gray infiltration of the site the commencement of ulceration is to be feared and appropriately dealt with. In many cases inexpert attempts have been already made to remove the foreign body. Such attempts often fail, and are often made with septic implements. Infiltration has then usually already occurred. The foreign body should be removed with antiseptic precautions, and the eye irrigated with boric lotion or even bichloride of mercury (1 in 10,000). The question arises whether atropine should be instilled. In the case of young people it is a safeguard and free from danger, consequently it should be done in all such cases if there is any doubt; but in the hands of the expert, with careful watching, it is often unnecessary, and it is to be remembered that it will entail absence from work for a week or so. In the case of adults, the instillation of a mydriatic may cause an attack of acute glaucoma. If the infiltration is slight and the conjunctival sac apparently clean, the case may be carefully watched from day to day; but if there is definite ulceration the use of a mydriatic is imperative and the case must be admitted to hospital or kept at home under constant supervision. Similar treatment is indicated in other cases of corneal abrasion in which no foreign body has been retained.

A Comparative Chemical and Clinical Study of Boiled Butter and Cream in Infant Feeding.

LOWENBURG, in the *New York Medical Journal and Medical Record* of March 7, 1923, concludes that volatile fatty acids exist in butter in even less stable combination than they do in cream.

Boiling butter five minutes slowly will drive off over fifty per cent of these acids.

Boiling butter two minutes is sufficient for clinical purposes; however, from three to four minutes would probably be a safer average.

Sweet butter contains less volatile fatty acids than does salted butter.

Boiling cream does not materially change its acid content.

Boiled butter may be added advantageously, in varying and gradually increasing quantities, to skim-milk formulas or other food combinations.

Boiled butter appears to be a more acceptable addition to milk formulas than does cream.

The presence of flour or other forms of starch, though acceptable, to insure an even distribution of the fat, are not necessary essentials to the digestibility of boiled but-

ter; especially they do not have to be present in equal amounts.

Vomiting and diarrhea are neither inaugurated nor made worse by the addition of boiled butter; on the contrary, they often cease after the addition of this substance.

Constipation has been the rule, and the reaction of the stool has been found to be feebly or markedly alkaline.

All cases, free of parenteral disturbances, to which this substance has been fed have experienced a uniform gain in weight, averaging an ounce to nearly two ounces per diem.

Thyroid Disease and Pregnancy.

LITZENBERG, in the *Journal-Lancet* for April, 1923, states that the usual treatment with careful régime will carry a majority of the cases through, particularly if we keep in mind the possibilities of surgery upon the thyroid gland. Induction of labor is seldom necessary now, since surgery in exophthalmic goitre offers so much. However, women with exophthalmic goitre are never safe if they conceive; therefore they should never marry. If they marry they should never conceive; but if they do in spite of advice, and exophthalmic goitre develops after marriage, they may be carried through the pregnancy with greater safety than formerly, provided they are always under the most careful scrutiny.

Postoperative Treatment.

MARTIN, in the *United States Naval Medical Bulletin* for March, 1923, tells us that the actual postoperative treatment of surgical patients in the Naval Hospital at Mare Island has been developed into a routine procedure which is followed in every case, the extent to which it is carried depending upon the seriousness of the patient's condition. After any major operation the patient is quickly moved from the operating-room to a warm bed in a warm ward. He is covered, but not weighted down, with blankets and is carefully watched for respiratory embarrassment while he is reacting. Proctoclysis is started immediately, using 300 cubic centimeters of a solution containing 5-per-cent glucose, 5-per-cent sodium bicarbonate, and 2 cubic centimeters of tincture of digitalis. This solution is administered by the slow drop method, and the proctoclysis is then interrupted for three hours to allow plenty of time for the complete absorption of the 300 cubic centimeters of solution. If the patient is in good condition at this time no more proctoclysis is given, but if he is suffering from peritonitis, if a gastrojejunostomy, cholecystectomy, or major amputation has been done, or if the patient is in poor condition from any other cause, the proctoclysis is continued after the three-hour interruption. It is then made a continuous slow-drop proctoclysis, using 5-per-cent glucose, 5-per-cent sodium bicarbonate solution, until the patient's condition warrants stopping it. The rule should be, if in doubt as to the condition of the patient, continue the proctoclysis. Fowler position is used for all cases of peritonitis and after all upper abdominal operations; flat beds are used for hernia and chronic appendicitis cases.

Gastric lavage is considered one of the most important therapeutic agents in postoperative treatment. Martin does not believe that it should be done routinely on all patients before they leave the operating table; it is only indicated at this time for patients who have not been prepared for an anesthetic. But after the patient has reacted from the anesthetic the most important duty of the ward surgeon is to watch carefully for indications for gastric lavage, the most important of which are persistent vomiting, distention in the intercostal angle, and the regurgitation of bile. Distention in the intercostal angle must always be looked for as dilatation of the stomach occurs many times without vomiting. The greatest aid to securing a smooth convalescence following gastrojejunostomy is gastric lavage, which may be done as early as eight hours after operation

and should be done routinely the morning after operation. If there is time before a stomach or gall-bladder operation he believes that the patient should be accustomed to swallowing a tube so that it can be passed without discomfort after operation. He uses a Jutte tube and a 100-centimeter Luer syringe for all gastric lavage, and finds it very comfortable for the patient and the most efficient method of thoroughly emptying the stomach. The solution used should be very hot water containing 20 grammes of sodium bicarbonate to the liter, and to secure the best results the lavage must be very thorough.

An enema consisting of glycerin 6 ounces to a pint of warm water is given as a rule forty-eight hours after laparotomy. Martin says it is a mistake to give an enema too soon after a laparotomy; the results are much better by waiting, and it saves the patient useless disturbance and discomfort. Morphine is to be considered rather than an enema for early discomfort. He believes that pituitrin will stimulate peristalsis in very obstinate cases, but with his present postoperative routine he very rarely uses it. During convalescence patients are given 2 ounces of mineral oil at 9 P.M. and soap-water enemas when indicated.

All patients, except those with infection of the peritoneum, who are given nothing by mouth until the condition is controlled, are given water in small quantities as soon as they are over their anesthetic nausea, and are gradually increased to full liquid diet by the time they have had their first enema. Soft diet is started very early, as a rule after twelve hours on liquid diet, and helps to relieve gas pains. Patients who have had gastroenterostomies are given the same diet until soft diet is reached, when they are given six small feedings a day instead of three; they are given no meat until two weeks after operation, when minced chicken and scraped beef are gradually added to their diet. It is a mistake to pamper these patients, as they need very little encouragement to complain for the rest of their lives, so their after-treatment should follow the regular ward routine as closely as possible.

Morphine gr. ¼ and atropine gr. 1/150 is given by hypodermic injection just before the patient leaves the ward for the operating-room, and is given after operation if necessary. Each dose of morphine is given dissolved in 2 cc of 25-per-cent solution of magnesium sulphate. He has found that the magnesium sulphate prolongs the action of the morphine and markedly lessens its nauseating and depressing effects. The quantity of morphine administered to patients in the surgical wards has been decreased by half since this method was instituted.

The drugs to be considered for patients in critical condition are digitalin gr. 1/100 every four hours by hypodermic, or strychnine sulphate gr. 1/30 by hypodermic every four hours. For sudden critical change in condition camphorated oil in 2-cc doses by hypodermic and strychnine sulphate gr. 1/30 to 1/15 by hypodermic are probably most efficient.

Thyroid Disease Benefited by X-ray Treatment.

In the *Journal-Lancet* for April, 1923, ALLISON reports that a study has been made of 35 cases of exophthalmic goitre, observed from January, 1920, to the present time, on which roentgenotherapy was completed before February, 1921. The series does not include cases admitted to the surgical service, some of which were more toxic, and were submitted to surgery immediately. The cases were all treated with a standard dosage at three-week intervals. The radiation consisted of 30 milliampere-minutes of rays filtered through 4 mm. of aluminum and one thickness of sole leather. The target-skin distance was 8 in. and the voltage was equal to an 8-in. spark-gap measured between blunt points. Three portals of entry were used, one over each lobe of the thyroid and one over the thymus. If marked improvement was not

noted at the completion of the fourth treatment, the dosage was increased to 34 milliampere-minutes, other factors remaining constant.

Of 27 patients with Graves's disease without complications who were subjected to *x*-ray treatment, but not operated on, 24 are well, both from the clinical and laboratory standpoint. The treatment has been completed for nearly eight months. The remaining three cases came to operation. Of these, one was definitely improved before operation, and the other two were normal a few months after operation.

Of six cases of postoperative hyperthyroidism (relapses) one showed a definite cure; five showed no improvement.

Of three cases of thyrotoxic adenoma, none showed any response to *x*-ray therapy. The only patient who was operated on during an increasing basal metabolic rate died during operation. He feels that the results in the earlier cases might have been attained more quickly with intensive *x*-ray therapy.

No bad results or complications attributable to the treatments have been noted in this series.

The Treatment of Puerperal Infections.

In the *British Medical Journal* of March 24, 1923, WATSON asserts that the first thing to do in any case is to make a general examination of the patient and to abstain from any local treatment until the indications for it are quite definite. Finding nothing extragenitally we should investigate the pelvic organs. The perineum is inspected. If there is a wound and it looks inflamed, any stitches ought to be removed and free drainage allowed. The same applies to stitches in the cervix. A careful and very gentle bimanual examination may now be made. At this early stage probably nothing will be discovered, or at most a large tender uterus with profuse and perhaps fetid lochia, but in the absence of physical signs in the other systems, or in the perineum or cervix, we may conclude that the uterus is the source of the infection. At this stage he emphatically holds that exploration should cease. There is a great temptation to try to find out what the condition of the interior of the uterus is by introducing the finger into it. As a matter of fact we are seldom much the wiser even if we do get the finger in, and the possibilities of doing harm are great. We presume that there is a localized patch of inflammation on the uterine mucosa. He asks, what good is it going to do to feel it? None whatever; and it may be productive of much harm by creating fresh raw surfaces and disturbing thrombi.

For some days after delivery the placental site is raised and irregular owing to the normal thrombus formation in the vessels. Any rough manipulation of this area may readily convert a local into a general blood infection. And if this is possible as a result of a digital exploration it is still more likely to occur if a curette is used. When we find the source of infection in the perineum we do not use a curette to scarify the infected tissue. We do not use a sharp spoon for a recent infective ulcer anywhere else in the body. Why, then, should we do it in the uterus? There is no good reason for it and several very good ones against it. In the first place, we cannot hope to curette the infected patch only and leave the rest of the mucosa untouched. We are bound to create a large number of fresh raw surfaces and inoculate into them the infecting germ, thus favoring local spread. We are bound to disturb thrombi and open up blood-vessels, leaving the door open for a general infection. We remove the reaction zone of tissue, open up the lymphatic channels, and produce such a disturbance in the relation of parts by our manipulations that extension to the blood stream, to the broad ligaments and peritoneum, is favored. We know that all these things are liable to occur. Does curetting the uterus favor them or not? He says most emphatically that it does. And yet we know that it is frequently carried out.

Watson hears it asked, Suppose there is a piece of placenta or membrane left inside the uterus—may this not be the cause of the rise of temperature, and, if so, should we not get it out? There is no reason for thinking that a piece of membrane or of placenta retained in the uterus predisposes to bacterial invasion. A recent investigation of 149 cases of retained placenta showed that in 44 per cent the puerperium was absolutely afebrile, in 50 per cent there was very slight fever, and in only 6 per cent was there severe fever, with one death, and in four of these severe cases there had been intrauterine manipulation of various kinds. It has been his teaching for some time, in conformity with that of the great majority of obstetricians, that even at the time of confinement it is wrong to put the hand, finger, or instrument into the uterus to remove pieces of membrane or placenta which may have been left behind unless there is excessive hemorrhage. The risk of introducing septic organisms is far greater than that run by leaving things as they are. Such retained portions separate and come away of themselves in a few days. And if it is risky to remove such pieces from the presumably germ-free uterine wall, how much more so is it when we know organisms to be present! The infective process is more likely to be in the part of the uterine wall from which the placenta has been detached rather than on that to which a small piece of membrane or placenta still adheres. In forcibly detaching such a piece we are simply opening up fresh surfaces for infection. Therefore, he holds that even when we know that there is a portion of placenta or membrane in the uterus it is wrong to curette or introduce the finger or other instrument.

Even the intrauterine douche he believes to be more productive of harm than of good. The intrauterine douche was introduced as a means of treatment in the early days of antiseptics, when it was thought that they did much more in the way of destroying organisms in the tissues than we now know to be the case. Any antiseptic we may use as an intrauterine douche has nothing more than a surface cleansing effect, and very little of that. It gets rid of possible accumulation of decomposing matter and pus from the uterine cavity, but the uterus is a muscular organ, and we have drugs at our disposal—ergot, pituitrin, and quinine—which, when administered, prevent any such accumulation. Watson recalls when he was a house-surgeon in the Edinburgh Royal Maternity Hospital twenty years ago, when it was practically a routine to give an intrauterine douche to every patient with a rise of temperature lasting for more than two days, that in a very large proportion the douche was followed by a rigor or chill and a further elevation of temperature. That was supposed to be a nervous phenomenon. But was it? Is it not far more likely that it was due to a flooding of the blood stream with organisms—a temporary bacteriemia?

Sampson has shown, by injecting the venous channels of the uterus with a substance which gives a shadow with the *x*-rays, what a very complicated system the veins form, and how free their communication is with the surface vessels of the mucosa. The thinness of their walls and the power of contraction in the uterine muscle makes it exceedingly easy for any minute substance in the uterine cavity or on the surface of the mucosa to be sucked into them, provided a surface vessel is laid open. Frank has shown, by blood cultures taken before and after intrauterine douching and simple manipulation of the uterus, that bacteriemia is very frequent after such proceedings. It is usually only a temporary condition, the blood again being sterile after a few hours, but if the initial dose of organisms is massive enough they may continue to grow and the case develop into one of true septicemia.

Recent experience in the treatment of septic wounds has shown that the essential thing is free drainage, and the fewer antiseptics and the less interference the better.

Now in the infected uterus the cervical canal always remains patulous and drainage is assured. It may be helped by placing the patient in the Fowler position and by administering the drugs he has mentioned. An ice-bag may be applied to the abdomen. It relieves any pain that may be present and reduces fever. A free liquid diet is given, the bowels are kept open but not severely purged, and if possible the patient is kept in the open air. Meantime a blood culture ought to be taken and repeated at intervals. He has ceased to take swabs from the interior of the uterus in the initial stages of infection because the results obtained were not commensurate with the difficulty of the proceeding and the risk to the patient. If there is accumulation of fetid discharges in the vagina a gentle vaginal douche may be given.

To this line of treatment the great majority of puerperal infections will yield and the patient make a perfect recovery. If extension takes place, this will declare itself in the course of a day or two and a definite diagnosis can be made. Cellulitis should be evident to bimanual palpation in three or four days; a pus tube a little later. When these have declared themselves the patient must make up her mind to a long period of inaction. In the majority of cases cellulitis will resolve in the course of a few weeks. A few undergo suppuration, and pus must be evacuated through the vagina or extraperitoneally through the abdominal wall. In the case of a pus tube we wait, if possible, until the temperature has reached and remained normal for some time before attempting removal. If the temperature remains high and the patient's general condition is deteriorating, pus may be evacuated through an incision in the posterior fornix and, if necessary, the tube removed at a later date. If there is evidence of peritonitis an incision may be made in the posterior fornix and drainage established.

Thrombophlebitis is evidenced by wide excursions of temperature, by repeated chills, and by the palpation of some thickening on one or on both sides of the uterus. Such cases may be dealt with by ligation of the ovarian or common iliac veins. This somewhat heroic treatment has been carried out by many operators, often with surprisingly good results. If there is evidence of local abscess formation in the uterine wall, hysterectomy can be performed.

If the temperature remains high and there are not present in the pelvis physical signs to account for it the probability is that there is a blood infection. This can only be shown by blood culture, frequently repeated if necessary. One of the members of his staff in the Toronto General Hospital took cultures from all puerperal patients running a temperature. His investigations are not completed, but he was surprised to find that so many of them had positive cultures at one time or other. Most of these made a complete recovery without special treatment.

In the treatment of true cases of bacteriemia he has used various kinds of intravenous medication such as magnesium sulphate, eusol, and salvarsan. He has also used serums. With all of them he has had recoveries, and at first attributed these to the drug used, until he found that, with no intravenous medication and with no serum, just as many patients got well. The great difficulty in assessing the value of these forms of treatment is that spontaneous recovery so often does take place.

What he has said regarding the treatment of puerperal infections occurring after a full-time delivery applies equally to those arising after abortion, either complete or incomplete. He makes it a rule never to curette the uterus or carry out any intrauterine manipulation in a case of abortion if the patient has a rise of temperature, unless there is severe hemorrhage. If the abortion is incomplete and a mass is felt projecting through and blocking the cervical canal, this may be very gently removed, but more interference than that he thinks unwise. After the temperature

has been normal for some days, if there is still evidence that the abortion is incomplete by the persistence of bleeding and the patulous condition of the cervix, gentle curetting may be carried out. Even after waiting this time it is almost invariably found that the patient's temperature rises after the operation, and she not infrequently has a rigor, showing almost certainly that there has been a blood invasion. Fortunately, in most cases, this is only temporary.

Watson touches very briefly on the whole subject of puerperal sepsis, but believes that his purpose is served if he initiates some discussion on the inadvisability or otherwise of active interference with the interior of the uterus in the presence of fever. From all the evidence of the literature and from his own experience he holds that it is inadvisable.

Clinical Experience with Quinidine.

BURWELL and DIEUAIDE, in the *Archives of Internal Medicine* for April, 1923, state that of sixteen cases of auricular fibrillation treated with quinidine sulphate, fourteen (88 per cent) reverted to normal mechanism.

Regular rhythm has persisted in eight of these patients; in six for more than six months.

In the cases remaining persistently regular there has been marked improvement in the patient's health.

Death occurred in three patients; in one, shown to be due to embolism from an intra-auricular thrombus.

Cardiac Problems in Adolescent Life.

In the *British Medical Journal* of March 24, 1923, SUTHERLAND points out that the treatment of heart disease during adolescence has certain problems of its own. Perhaps the chief is the prevention of further rheumatic infection. Acquired and chronic heart disease in early life is the result of acute rheumatic infection—for all practical purposes other causes may be left out. The danger of fresh infection or the recrudescence of latent infection persists as a real one all through adolescence. Sometimes this will take the form of an acute flare-up—acute rheumatic fever; in other cases it will be manifested by slight pains in joints or tendons or muscles, symptoms which do not incapacitate the patient but are unfortunately often accompanied by fresh endocardial and myocardial inflammation. Consequently his practice is to treat such patients all through adolescent life with sodium salicylate. This need not be given continuously, but for a week or ten days in every month the patient should take from 40 to 60 grains of sodium salicylate daily. This is the best preventive treatment of further infection which he knows.

Those patients who have a cardiac lesion but who present no symptoms under the ordinary routine of life had better be left alone so far as any heart treatment is concerned. In giving advice about their future life and work one will naturally select some occupation which does not involve great physical strain.

Those patients who have a cardiac lesion and who find that any extra exertion induces symptoms such as breathlessness had better be advised to observe their own limitations. Games and exercises should be regulated so as not to tire out the patient or produce cyanosis and breathlessness. In selecting a suitable occupation for their adult life it will probably be best for them to take up work of a sedentary nature so that the exercise they take may be independent of their work and not part and parcel of it.

Those patients who have a cardiac lesion accompanied by breathlessness and distress on any exertion do not require to be specially restricted. Nature will teach them to go slowly and not to do themselves harm. They have permanently damaged and disabled hearts.

During adolescent life there is less call for direct treatment of the heart than either before or after. No one has yet discovered a tonic which will improve the action of a

heart which has hypertrophied in order to overcome some permanent difficulty. No one has yet discovered a tonic which will restore that heart when once the muscular power has given out. The more one studies the action of the heart in health and in disease the more one is struck by its wonderful power in accommodating itself to meet the ever-varying calls of the circulation, and in overcoming the difficulties and new problems introduced as the result of disease. Of all the self-regulating mechanisms in the human economy there is none which surpasses the heart in the power of meeting difficulties in health and developing compensatory changes in disease. These inherent powers of producing compensatory changes in the heart, largely through hypertrophy of the cardiac muscle, are especially manifested during adolescence and are not to be relied on to the same extent in adult life.

We can ease the work of a diseased and laboring heart by giving it partial rest. We can remove all physical strain by keeping the patient in bed. We can cut off the sources of nervous disturbance in the brain by sedatives and narcotics. We can deal to some extent with difficulties in the circulation owing to the engorgement of other organs or the presence of edema and effusion. These things are possible, but when it comes to be a question of direct action on the heart, treatment directed to improve the action of a failing heart, we are apt to discover our therapeutic helplessness.

Yet there is one condition in which the heart is disturbed and its action is impaired, not through the valvular lesion and not through myocardial exhaustion primarily, but as the result of an abnormally rapid rate. The cardiac force, as regards its pumping function, may be sufficient and the compensatory changes may be in working order, but the heart muscle shows signs of failure owing to the rapid rate present. If the heart-rate is much increased the resting time of diastole is curtailed, and in the course of time exhaustion of the heart muscle follows. Many rheumatic hearts become disturbed at times during adolescence by the development of this rapid rate, which may be a regular action with a normal rhythm or an irregular action with an abnormal rhythm. In both of these cases it is the rapidity of the heart which is causing the trouble and which is calling for treatment. Under these conditions we can employ digitalis with great confidence, giving full doses for a few days, and we shall often find that when the heart is slowed the patient is much relieved as regards all the signs and symptoms of cardiac failure. Sutherland does not say that digitalis will act in all cases. Unfortunately it will not, and we cannot at present tell why it slows the heart in some cases while in others it fails to do so. But it remains as our great sheet-anchor in cases of cardiac failure associated with a rapid action of the ventricles.

Intrathecal Injections of Sodium Bromide.

The *Lancet* of March 24, 1923, in its "Annotations," states that in 1913 the first report was published on the use of a solution of sodium bromide intrathecally for delirium tremens. Lippmann of Berlin now reports on its application in cases of tabes, suffering with shooting pains in the lower limbs, and in cases of spastic paralysis. In order to determine the effect of the solution on the meninges he started with weak solutions (1 per cent) and gradually increased the strength, the reaction of the meninges being ascertained by an examination of the cerebrospinal fluid, with special attention focused on the number of cells and the presence of albumin. Out of forty injections, in five only was there any subjective disturbance or rise of temperature, and the degree of reaction did not seem to be dependent on the strength or quantity of the solution used. For example, 20 cc of a 5-per-cent solution were injected in one case of tabes without producing any objective or subjective symptoms, whereas another case which received 18 cc of a 3-per-cent solution developed a temperature of 38° C. This case, however, had previously had a temperature of 37.8° C. on

several occasions, and had suffered from renal sclerosis, uremia, vomiting, and delirium. She reacted to the injection with delirium and vomiting, and the number of cells in the cerebrospinal fluid was found to be 4600 twenty-four hours after the injection. In spite of this, in a further twenty-four hours the patient was completely relieved of her symptoms. One case had a rigor, and the temperature shot up to 40° C. after the injection, but it returned to normal in a few hours. A third case was a man, aged 67, suffering from severe bronchitis, coronary sclerosis, and a large cerebellar cyst, causing the spasticity for which treatment was undertaken. After the injection the temperature rose to 38.2° C. and cervical rigidity became marked. The cerebrospinal fluid contained 6000 polynuclear cells, which in twenty-four hours decreased to 120. The man died four days after the injection, probably from angina pectoris. The rapid diminution of the cells indicated that the meningeal irritation was not the direct cause of death. Two other cases had a slight rise of temperature which rapidly sank to normal, but they had both previously had cystitis with a subfebrile temperature.

In the majority of cases examination of the cerebrospinal fluid showed about 100 cells following injection, although in some of these a similar number had been found previous to treatment. In some whose cell count was increased before injection, the number subsequently diminished to 3-6 cells. The albumin in most cases was slightly increased temporarily. Microscopical examination of the meninges in the patient who died showed how little inflammatory change had been produced by the solution.

Lippmann states that from his experience in most individuals no reaction is produced by sodium bromide, but in a few cases a slight reaction occurs which disappears clinically within a few hours. He treated five cases of tabes with shooting pains in the legs, of whom two were greatly improved, one was slightly benefited, the fourth was refractory, and the fifth died of coronary sclerosis. Three cases of spasticity of the lower limbs were treated with marked improvement in all. For a detailed report of the cases readers are referred to the original. An attempt to relieve pain caused by secondary carcinomatous deposits in the spine was unsuccessful. In the tabetic cases a one-per-cent solution was used, in the spastic patients a 1.6-per-cent solution, which is isotonic with the body fluids; 10 cc of the cerebrospinal fluid was allowed to run out and the same quantity of the sodium bromide solution was introduced. The injections were given at intervals of fourteen days or more according to the clinical manifestations. In the tabetic cases not more than three injections were given, but in the cases of spasticity they were repeated more often, up to eight times in one case. The injection of sodium bromide can also be used for the *x*-ray diagnosis of the level of spinal tumors.

How the bromide acts therapeutically is not clear. It has no anesthetic action on peripheral nerves, as can be demonstrated by subcutaneous injection, and that it does not remain long in the spinal canal is shown by the fact that twenty-four hours after injection less than a thousandth part could be recovered. Whether the action is chemical or biomechanical following the reaction of the meninges must remain unsolved until further observations reveal the nature of the process.

The Elevation of Temperature Produced by Caffeine in Hypothermia.

In the *Journal of Pharmacology and Experimental Therapeutics* for April, 1923, SALANT and KLEITMAN state that it is currently believed that caffeine raises the temperature in health, but no statements have been found in the literature concerning its effect when the heat-regulating mechanism is disturbed. The present report is the result of studies on the influence of caffeine in dogs when the temperature was lowered by means of chloral which was given by mouth. Their

experiments show that whereas caffeine exerts very little effect on normal temperature it is otherwise in hypothermia. A fall of temperature was prevented after the administration of chloral when caffeine was injected at the same time or soon after chloral. In another series of experiments caffeine was injected after a fall of temperature of 2° to 4° C. was produced by chloral. The injection of caffeine during this hypothermia was followed by recovery, the temperature becoming stationary after a sufficient amount of caffeine had been absorbed and then gradually rose until it became normal or rose slightly above in one hour and persisted. Observations on the effect of caffeine when given to dogs with normal temperature failed to show any appreciable change in the course of six to seven hours. In a few cases a rise of 0.15° to 0.3° C. occurred, but in a number of experiments the temperature remained normal after the administration of caffeine.

Precautions to be Taken After the Tonsil Operation.

HAYS, in the *Medical Times* for April, 1923, wisely asserts that the tonsil operation should never be considered a minor operation. It should always be done in a hospital and the patient be allowed all the time that is necessary for rest after the operation. In a recent review of a number of cases of tonsil operations in children, a statement was made that children who were operated upon in the clinic or were allowed to get out of bed the first day often lost a great deal of weight which they did not regain for months. On the contrary, where children were allowed to stay in bed for four or five days after the operation, they regained the amount of weight they had lost within a very short time, and the reaction from the operation was practically *nil*. Such an important fact should not be overlooked. Quite frequently parents are desirous of getting their children out of bed within a short time, with the result that the children lack vitality, and it is often a great many weeks before they regain their physical stamina.

Immediately after operation, the patient still being under the anesthetic, ice cloths should be applied to the neck, and these should be kept on continuously for the first twenty-four hours if they do not inconvenience the patient. The ice cloth reduces the inflammatory reaction in the throat and controls hemorrhage. However, if the cloths are particularly irritating (and this is often so in young children) they must be abandoned because the child will struggle and kick around the bed, and this excitement will offset any good that may arise from the use of the cloths. Children, particularly, should be made to swallow fluid as rapidly as possible after the operation. The throat is so extremely sore that sometimes the child will go for four days to a week without allowing anything to pass the pharynx. However, he must be encouraged to swallow at the earliest opportunity, first being given orange juice in which the white of egg has been whipped up or some milk which is slightly cooled. In order to eliminate the pain on swallowing, the attendant should grasp the head of the child with the palms of the hands over the ears and hold the head up so that the muscles of the neck are on a stretch. It will be found that the child can swallow in almost every case without any difficulty if this procedure is resorted to. Whether an actual act of swallowing takes place, or whether the child simply uses the esophagus as a funnel, it is impossible to say; nevertheless it is surprising to find how easy it is for patients to perform the act of deglutition if they follow this procedure.

Frequently, although there is no bleeding at the time of operation, oozing from veins and arteries which have been exposed will take place after the operation is over. Sometimes this will occur the first night, but he can cite an instance in which the acute hemorrhage occurred on the sixth day. This hemorrhage must be controlled at once. It is wise to watch the pulse. If the pulse rate is below 100 one need not be alarmed, but if the rate jumps up from

110 to 150, something must be done immediately to control the bleeding. If the child is at all tractable the mouth should be opened and pledgets of cotton, on which a small amount of adrenalin or thromboplastin is placed, may be inserted into the bleeding cavity. One cannot insist too strongly on the necessity of good illumination while making an examination of the throat at this time, because a spurting vessel, deep down in the space between the pillars, must be seen, grasped and tied off, if the bleeding cannot be stopped by the ordinary procedure. In no instance has he had to resort to very radical procedures to stop postoperative hemorrhage, because in almost every one of his cases the oozing has been venous. If the child, however, is in a very precarious condition one may have to resort to intravenous infusion of salt solution or the actual transfusion of blood.

Impurities in Anesthetic Ether.

In the *Journal of Pharmacology and Experimental Therapeutics* for April, 1923, Rowe states that the pharmacopœias of the world specify that aldehyde and peroxide are not permissible in anesthetic ether. Over one-third of the high-grade anesthetic ether on the market to-day contains appreciable amounts of one or of both of these substances. All anesthetic ethers should be analyzed as a matter of routine, to preclude the presence of these deleterious materials.

A colorimetric method based upon fuchsin has been devised for the exact determination of the aldehyde content in anesthetic ethers. The titrimetric method, using cadmium potassium iodide in acid solution and sodium thiosulphate, has been devised for determining the exact quantity of peroxide in ether.

Evidence is available showing that the type of container is a factor in the contamination of ether initially pure, and that the metal of the container exercises a definite catalytic action on the oxidative reaction producing the impurities.

The Efficacy of the Arsenic Antidote.

McGuigan, Atkinson and Brough, in *Journal of Pharmacology and Experimental Therapeutics* for April, 1923, state that this investigation was undertaken at the request of the United States Pharmacopœial Revision Committee. The work is essentially a repetition and confirmation of DeBusscher's work. However, they have not found, as DeBusscher did, that the antidote hastens death when the solid As_2O_3 is used, but in this case they found it, on the average, to delay death a few hours. Neither do they find it of temporary value in case of poisoning by Fowler's solution, but rather that the antidote is without a significant influence. They feel that the average of DeBusscher's work and their own would probably be more nearly correct—that is, that the antidote is without influence on the end result of the action of the arsenic. The delay of death in some cases could be attributed to the colloidal nature of the antidote and not to any specificity of the substance.

In the case of animals which they have marked "survived" they mean that they were alive at the end of two weeks. This time was an arbitrary period taken because of the great variability in the toxicity of the arsenic as pointed out by DeBusscher, Schwartze and others who have investigated the subject. The same dose may kill in a few hours, or only after months. This is especially true of the solid As_2O_3. They have found that those animals which survive two weeks may survive much longer, and by taking two weeks as a limit of observation they do not think there would be any definite change in conclusions had they carried the observations over a longer period. This is especially true since the ratio of treated to untreated animals remains practically the same at this time.

The objection may be raised that they did not use a sufficient quantity of the antidote. The amount they did use did not modify the course of the action or the end result. Also the volume of the official preparation is too great to permit the use

of much greater quantities. In the last experiment quantities as high as 375 cc were used, and again they found that the individual results were of such variance that there was but little difference between the number of deaths of those given the antidote and of those without it. In both cases there were marked discrepancies in the results. Again the antidote of the Belgian pharmacopœia is much stronger in iron than our own, and DeBusscher's work answers this part of the objection. Their own work, therefore, is in general corroborative of that of DeBusscher. The only change produced by the antidote is an unimportant delay in the average time of death when the solid As_2O_3 is used, due, they think, to the nature of the antidote which delays absorption rather than to chemical neutralization of the arsenous trioxide. They therefore claim that ferri hydroxidum cum magnesii oxido is of no practical value in the treatment of arsenical poisoning. It has no influence in the course of poisoning by Fowler's solution; and further that there is a slight unimportant delay in the time of death when powdered As_2O_3 is used. This delay seems due to the colloidal nature of the antidote, and to delayed absorption rather than to chemical neutralization.

Viscosity as an Indicator of the Toxicity of Arsphenamine Solutions.

VOEGTLIN, JOHNSON, and DYER, in the *Journal of Pharmacology and Experimental Therapeutics* for April,, 1923, state that the viscosity of arsphenamine solutions (HCl salt) at 20° C. increases rapidly with concentration. When one per cent and more dilute solutions stand at constant temperature their viscosity decreases in a regular manner. Solutions of a higher concentration exhibit just the reverse phenomenon, inasmuch as their viscosity increases on standing. These viscosity changes are due to a physical change and not to a change in chemical composition. Given constant temperature, rate of injection and concentration, it was found that the viscosity of such solutions represents a good indicator of their toxicity as determined by intravenous injection into rats of standard size. The toxicity of solutions of high viscosity is several hundred per cent greater than that of solutions of low viscosity. There is a surprising agreement between the toxicity and viscosity of various lots of arsphenamine. Similar observations were also made by using solutions of the monosodium salt of arsphenamine. In this case it is necessary, however, to guard against oxidation of the drug, as this tends to counteract the physical change produced on standing of such solutions.

These observations furnish convincing evidence that the so-called toxicity of arsphenamine depends upon two factors: the physical, which causes death by the formation of emboli (acute deaths), and the chemical factor, which causes death by the gradual oxidation within the body of the arseno compound to the corresponding highly toxic trivalent arsenoxide (late death).

The Value of Treatment in General Paresis.

SOLOMON, in the *Boston Medical and Surgical Journal* of April 26, 1923, states that general paresis is an active spirochetal disorder which can be theoretically arrested.

Despite a great divergence of opinion as expressed in the literature, there is considerable evidence that antiluetic treatment long continued and intensively given will arrest the paretic process in a reasonable percentage of cases, especially if begun early in the disease.

His own experience has been that antisyphilitic treatment is of considerable value in the case of general paresis, and that many paretics, even after the onset of marked pyschotic symptoms, may recover sufficiently to return to their former occupations for a period of years; in some cases in his experience for more than seven years without a return of symptoms.

Remissions may result from the use of intensive intraspinal or intraventricular injections when these apparently could not be

obtained from intensive intravenous treatment alone.

More potent antisyphilitic drugs and more efficient methods of penetration of the drug into the tissues of the central nervous system may be expected to give better results in cases of general paresis.

Non-specific therapy, especially the inoculation of paretics with malaria, is reported in German literature to give very satisfactory clinical results. It is necessary to keep an open mind at present on the value of non-specific therapy and methods of increasing the patient's immunity.

There is reason to believe, both from the reports in the literature and from his own experience, that the paretic process may be arrested and symptomatology halted, and the patients returned to social activities and productive work.

Surgical and Genito-Urinary Therapeutics

Blood Transfusion in Obstetrics.

BARNEY (*Ohio State Medical Journal*, Feb. 1, 1923) observes that incompatibility occurs at times between the blood of the mother and child, so it behooves us to group and match these bloods before a transfusion, a point which has been frequently ignored. It has been observed that the agglutination of the donor's cells by the recipient's serum gives a very marked reaction often with a fatal result. It has also been observed in the condition where we have the recipient's cells agglutinated by the donor's serum that the reaction is not severe. This is explained by the fact that the incoming blood is diluted by the recipient's blood, and thus minimizes any reaction that may occur.

Reaction occurs where the grouping and matching have not been done or where some mistake has been made.

This reaction usually comes on very suddenly, that is with the first 10 cc of blood, the recipient complaining of an uncomfortable feeling in the chest, dyspnea, and a feeling of impending death. Preceding this a sign of value is a slow dilatation of the pupils, which is accompanied by the sensation of shooting stars before the eyes. A spasm may take place with a marked arching of the neck muscles. The pulse becomes very weak and rapid and the mucous membranes and nail beds show cyanosis. All the symptoms of shock are present. As an antidote for the respiratory distress 1 cc adrenalin hydrochloride (1:1000) seems to give almost instantaneous relief. This symptom is probably due to the spasm of the muscles in the bronchioles.

The method of transfusing blood resolves itself into two procedures:

First, giving unaltered blood, *i.e.*, whole blood. Second, modified blood or the citrated blood. The author uses the paraffined tube as originated by Kimpton and his co-workers. The tip of this tube is inserted distally in the vein of the donor and the blood rises in the tube by the rising blood-pressure in the vein, which is brought about by making pressure manually or by means of the cuff of the blood-pressure apparatus placed above the elbow. When the tube is filled it is transposed to the vein of the recipient and inserted proximally, and is gently forced into the vein by means of air pressure. The procedure is quickly executed, technical difficulties are more easy to overcome, and the reactions are very few.

The general consensus of opinion is that we obtain a great many more reactions with the citrate method; according to Bernheim from 20 to 40 per cent, as contrasted with 5 per cent in the whole blood procedure.

Deaths following the use of the citrate method have been reported and have been confirmed by laboratory test.

In postpartum hemorrhage blood transfusion is practically specific. Twin pregnancies, tumors of the uterus, hydramnios, and long labors suggest that provision should be made against its occurrence. The transfusion is indicated when there is a thready pulse, pallor, moist skin, hemoglobin index below 60 per cent, and systolic blood-pressure below 90 mm.

As to placenta prævia, central implantation represents the most dangerous type since bleeding continues as labor advances. There are usually indicative signs during the last few months of labor, in the form of bleeding without other adequate cause, unattended by pain and often following exertion. Since these cases are subject to postpartum hemorrhage transfusion before delivery is indicated as a prophylactic, especially when there is at this time a low red cell blood count and a low hemoglobin percentage. Bearing on the question of hemorrhage occurring as it does in the later months of pregnancy and attended by a heavy mortality both of mother and child, bleeding is usually intrauterine; little may show externally. Pain, rapidly enlarging uterus, with often a slow pulse, are suggestive signs. Preoperative transfusion is indicated. As for hemorrhage in the new-born, recognized readily when it occurs in the bowel or stomach, with difficulty when into the pleural, peritoneal or cranial cavities, the first treatment is by horse serum subcutaneously. Should this prove inadequate blood transfusion is indicated, and this the author states always proves successful. The internal jugular vein is approached by an incision just above the clavicle between the anterior part of the trapezius muscle and the posterior part of the sternomastoid. The vein is readily exposed by splitting the underlying muscle with a hemostat and separating it from the carotid sheath. About 80 to 100 cc of blood should be given. The longitudinal sinus of new-born babies is small and subject to such variations that its use is attended by danger.

Bearing on puerperal infection, blood transfusion is by far the best therapy. It should be given in small doses, 300 cc, at a time; at five- to seven-day intervals if there is no marked improvement following the first dose.

Trachoma.

WRIGHT (*Ohio State Medical Journal*, February, 1923), speaking of the diagnosis of trachoma, states that the conjunctiva covering the lids is possessed of glands and that of the ball is not. These glands are lymphoid follicles situated in the lid for the purpose of lubricating the eye, and during an inflammatory condition of the conjunctiva are filled up with secretive matter which is often regarded as trachoma granules, when they are not. This makes a diagnosis difficult, even for the skilled oculist; inasmuch as their rational treatment is identical, however, the difference between a true and pseudo-granule is of slight importance.

The rough or granulated conjunctiva in trachoma, which is the distinctive characteristic of this affection, is due to hypertrophy of this membrane, those granules occurring on the lids being designated as papillary, and those in the fornices as follicular. A microscopic examination demonstrates that they are of the same character and consist of circumscribed accumulations of adenoid tissue, their location being the cause of the difference in appearance.

Trachoma is persistent and is not readily responsive to treatment. Only the light cases and those that come under treatment early are cured. In other cases there are left sequelæ that are accompanied by a permanent impairment of the eye, the most common of which are corneal ulcer, pannus, ectropion, and staphyloma.

As to prevention, there has been great progress of late in the treatment of inflammatory conditions of the conjunctiva, espe-

cially of trachomatous origin, in the abandonment of strong caustic applications and such surgical procedures as macerating it by means of grattage and roller forceps. These processes destroy the integrity of that part of the conjunctiva attached to the lid, leaving a cicatricial condition, with its attendant complications.

The treatment of true trachoma granules is necessarily protracted, because of their pathologic character, and these are liable to remain stationary for years, but ultimately, in fortunate cases, under well-directed treatment, may disappear without leaving a trace behind. Pseudo-trachoma is susceptible to treatment, but if neglected will develop into true trachoma. It is here where there is an opportunity to prevent the propagation of the affection.

Trachoma in this country is doubtless increasing rapidly, and it is depressing that there is so much indifference concerning an affection that has been the cause of so much blindness. It is not improbable that under proper hygienic conditions it is a self-limited affection, and in connection with well-directed treatment we may hope to alleviate, if not prevent, many of its annoying complications. This depends upon the patient more particularly than on the physician. It is inborn in people generally to disregard what they consider a trifling affection, such as a slightly inflamed eye, until a complication, such as a corneal ulcer, compels them to seek treatment, when many resort to such household remedies as applications of raw scraped potato, raw meat, steeped tea-leaves, cooked onions, and even urine.

In subacute catarrhal conjunctivitis and true trachoma, avoid the use of strong caustic solutions of nitrate of silver and the sulphate of copper stick. The bichloride of mercury solution 1:5000 is of great value when cautiously applied. If convenient to the physician it should be applied by him, twice a week, by everting the lids and applying the solution thoroughly, by means of a cotton applicator, to the conjunctival surface, being sure to bring the solution in contact with the retrotarsal fold—*i.e.*, that part of the conjunctiva between the lid and ball. This part of the conjunctiva is usually neglected in the local application of remedies.

Should it be inconvenient for the patient to visit the physician so often, then he should be supplied with the solution to be instilled in the eye in the manner of eye washes generally, a few drops in the eye morning and evening, to be continued until a marked inflammatory action is noted, when its use is discontinued and substituted by boric acid solution frequently applied. The inflammatory action incited by the bichloride solution is a real benefit, inasmuch as it is transitory, and is followed by a marked decrease in the granules and diminution of the discharge. Many of these uncomplicated cases require nothing more than this treatment, and if they couple it with good hygienic conditions, they fully recover by its use alone.

If a defect of the vision exists in the absence of conjunctival irritation, an oculist should be consulted; not an optician or optometrist. The physician can direct the patient.

The author states that he has used a collyrium for years with great satisfaction. Aside from its antiseptic attributes it has other valuable properties. He makes up a quantity for general use, as follows:

Acid. carbolic., gtts. xxxij;
Acid. boric., ℥iij;
Ext. hydrast. fl., f℥ij;
Glycerin.,
Aquæ camphoræ, ää f℥iv;
Aquæ destil., f℥viij.

Mix and shake thoroughly, filter.

Sig.: Two or three drops in the eye two or three times a day.

Carbolic acid is valuable in conjunctival affections, not alone for its antiseptic qualities, but also for its anesthetic effects. The soothing influence which the solution gives in these cases, especially when complicated with corneal ulcer, is remarkable. Its effects are prompt and lasting.

Boric acid is a splendid antiseptic, and especially adapted for inflammation of the

conjunctiva. It is purifying and cleansing and is admissible in any inflammatory condition of the eyes, and for such use is a valuable household remedy.

Hydrastis, in its different forms, is noted for its tonic effects on mucous surfaces generally, and especially so on that of the conjunctiva.

Glycerin is hygroscopic, and conveys the medical substance with which it is saturated to the fluids within the conjunctiva.

Camphor acts as a stimulant and excites functional activity of a mucous surface when locally applied.

A change in eye washes occasionally becomes necessary, because from constant use for a considerable time they often become inactive.

Argyrol in solution of 25 to 50 per cent is a splendid antiseptic for conjunctival affections, the only inconvenience being that after forty-eight hours the solution becomes inert.

Ointment of yellow oxide of mercury is always advisable. A one-per-cent ointment (petrolatum, U. S. P., ninety-nine per cent) is a standard preparation. It must be well prepared or it will cause irritation. It should be applied to the margins of the eyelids on retiring, just sufficient to moisten.

The patients should not house themselves except in inclement weather, but seek an outdoor life as much as possible. Their living and sleeping rooms should be well ventilated. They should avoid employment in dust, smoke, and irritating vapors; as well as a heavy diet, such as meats and intoxicating liquors. They should have a free evacuation from the bowels every day; to aid this saline cathartics are best. The eyes should not be bandaged. If eyes are very sensitive to light use plain smoked glasses, not goggles. They must have their own beds, their own basins for ablution, their own towels, and their own handkerchiefs, which should be changed every day, after which they should be immersed in boiling water previous to being washed. The face, and especially the eyelids, should be washed with soap and water at least twice a day, and especially upon retiring. The eyelids should never be rubbed with the hands; a clean handkerchief should be used instead. Finally, they should carry out the physician's instructions implicitly.

Some Results of Prostatectomy.

BARNEY, HAINES and SHEDDEN (*Chicago Medical Recorder,* February, 1923) thus conclude a paper on this subject:

Patients with an obstructing prostate may live in comparative comfort for several years without operation.

Cancer of the prostate, whether operated or unoperated, may not interfere with general health and activity for a number of years.

While the median perineal operation is frequently followed by extremely satisfactory results, it may and often does result otherwise to the discomfort and detriment of the patient. The results are not so dependable as in the suprapubic operation.

Incontinence of urine, more or less complete, may follow the suprapubic operation, but does so less frequently than after the perineal operation. Unless the incontinence is very definite and well marked, it may be and often is mistaken for marked urgency.

The urine eventually becomes free from infection in nearly half the cases.

Cloudy urine does not always indicate renal infection; the bladder alone may be involved.

The suprapubic wound gives rise to hernia in but a very small per cent of cases, almost all of them in men who are doing hard physical work.

The general health of a patient is generally much improved following prostatectomy.

The size of the urethra decreases as time goes on after operation, but in spite of this the urine may be uninfected, there may be no residual urine, and the patient may have no subjective symptoms whatever.

The non-proteid nitrogen test shows a decrease in the number of milligrammes per 100 cc after prostatectomy, this being

probably due to better drainage of the kidneys and to an improvement of general condition.

On the whole, prostatectomy has wrought no appreciable change in the sex function.

The Treatment of Epithelial Tumors of the Urinary Bladder.

KIDD (*Chicago Medical Recorder,* February, 1923) basing his study on 162 cases personally observed and treated, after some words of grateful appreciation to the Mayo Clinic at Rochester and to Dr. Franklin H. Martin and the librarians of the American College of Surgeons, contributes a clinical study and an evaluation of the now widely accepted method of dealing with vesical tumors of large practical value.

He sums up his conclusions as follows:

In cases of papilloma of the bladder of a benign type diathermy as applied through the cystoscope holds out at least a 90-per-cent chance of cure without the risk of opening the bladder. To open the bladder and snip out such tumors should therefore be considered as a grave surgical misdemeanor, one that is still far too common.

In case of papilloma of the bladder of doubtful malignancy, it is possible for an expert to obtain a certain number of cures by means of diathermy through the cystoscope. Nevertheless if diathermy fails to show an adequate destructive reaction in the tumor after at most three treatments, it should be given up and subtotal cystectomy should be carried out.

In cases of malignant papilloma, early papilliferous carcinoma and even of very early ulcerating carcinoma of the bladder, subtotal or partial cystectomy makes a great advance in bladder surgery. It should render the old intravesical operation obsolete except in a few isolated cases. It is an operation of considerable technical difficulty and presents a definite risk to life, but when successful it leads to a higher percentage of real cures than after the older type of operation, as its principles are based on a firmer pathological foundation. All cases of partial cystectomy should be followed up at regular intervals by means of cystoscopy.

Total cystectomy has been rendered almost obsolete by partial cystectomy, diathermy, and radium. It should be reserved for cases of multiple malignant papillomata that defy other treatment and for a few favorable cases of early carcinoma involving both ureteric openings.

Ureterostomy presents almost as great risk to life as total cystectomy. When successful it brings great relief, and it may be used as a preliminary to total cystectomy in a few favorable cases.

Radium has not yet justified its claim to supersede surgery. The future may decide otherwise when we learn to control radiant energy. Nevertheless it has already established a claim to our very closest consideration. In the present state of knowledge Kidd believes that it has already replaced total cystectomy. That is to say, for that class of case in which we should formerly have considered cystectomy, we should now prefer to advise radium treatment, combined perhaps with open fulguration and deep Roentgen ray therapy. Again we should cease to remain content with simply draining or leaving alone so-called inoperable cases. We should advise them to have their bladders opened and treated by diathermy, or fulguration combined with the implantation of radium emanation glass tubes, and followed up by deep Roentgen ray therapy and cystoscopic application of radium and diathermy.

A Review of 153 Cases of Bladder Stone Removed by Lithotrity.

CRENSHAW (*Minnesota Medicine,* February, 1923) notes that the ease with which even an inexperienced surgeon can perform cystostomy for stone has had a tendency to reduce the number of litholapaxies, since there are relatively few surgeons who are expert with the lithotrite. Granting that complications necessitating cystostomy occur in probably more than 50 per cent of

cases of stone in the bladder, the results of lithotrity are so much better that such a procedure should be followed unless definitely contraindicated. The contraindications are:

A stone of such large size that the jaws of a lithotrite will not embrace it.

A stone so nearly filling a contracted or deformed bladder that the lithotrite jaws cannot be opened.

Prostatic hypertrophy, bladder tumor, diverticulum, or other complications which would necessitate cystostomy following the removal of the stone.

In cases of prostatic hypertrophy and vesical calculus in which there is some contraindication to cystostomy, litholapaxy can usually be performed under sacral or general anesthesia in spite of the prostatic obstruction. There are many cases, also, in which a small prostatic hypertrophy is increased in size by the congestion due to the bladder stone, and all residual urine and symptoms will disappear following the removal of the stone. This type of case should unquestionably have a litholapaxy. Stones in a deep diverticulum with narrow orifice require cystostomy, while those in shallow pockets can often be crushed and the pocket opened widely into the bladder by fulgurating the orifice.

The nucleus of the stone may be of such physical character that it cannot be readily freed from the lithotrite. For example: A rubber catheter head was broken off and left in the bladder of a woman, following an extensive resection of the sigmoid for carcinoma, and a stone formed before she was in condition to have the catheter head removed. The stone was partially crushed with a fenestrated lithotrite, but enough of the rubber was driven through the window to make it impossible to free the lithotrite from the stone, and it was impossible to remove the instrument from the bladder with the stone attached. After many futile attempts to free the instrument, the lithotrite was delivered as far as possible and the rubber then cut along the outside of the blade of the lithotrite with a pair of curved scissors inserted through the urethra. After removing the lithotrite the stone was so crushed that it and the rubber were easily removed through the urethra by a forceps. A second example was a man with a tight urethral stricture, who had years before broken off in the bladder a portion of a home-made sound composed of paraffin and chewing gum, around which a hard stone had formed. This stone was eventually removed without serious results, but as the nucleus and fragments adhered to the lithotrite at every bite the instrument had to be removed, cleaned and reintroduced ten or twelve times before all fragments were small enough to pass through a cystoscope. A cystostomy would have been better in this case.

If a stone is attached to the bladder wall, and if any operation has previously been performed on the bladder or adjacent structures, the crushing operation may be difficult or impossible. One of the author's two fatalities followed litholapaxy in a patient who gave a history of a herniotomy a year before. With the aid of the cystoscope a stone was found attached to the wall of the bladder. The stone was removed quickly and easily with a lithotrite; a suture, which apparently was the nucleus of the stone, came away without any appreciable force with one of the fragments. There were no unusual symptoms until the third day, when the patient died rather suddenly. Necropsy was refused, but clinically the diagnosis was peritonitis resulting from the removal of the extravesical portion of the suture.

Stones with a sharp foreign body, such as a hairpin or knife blade, as a nucleus, unless proved to be free in the bladder with the aid of a cystoscope are not safely removed by litholapaxy. For example, a patient recently observed had a large stone in the bladder in which there was a wire hairpin. From the roentgenograms it appeared that both stone and pin could be removed with the lithotrite, but the cysto-

scope showed both ends of the pin protruding from the stone for three-fourths of an inch, and these were firmly fixed in the wall of the bladder. Subsequent cystostomy revealed that the pin had almost penetrated the wall of the bladder, and removal with the lithotrite might have caused a perforation.

In a recent study of 606 cases of vesical calculus examined at the Mayo Clinic in fourteen years, the following facts were noted: A diagnosis of stone was made by Roentgen-ray examination in 345 (76.83 per cent) of 449 cases, and by cystoscopic examination in 445 (98.88 per cent) of 450 cases. Vesical stone was undiagnosed and was discovered at operation for hypertrophied prostate (17) or stricture (2) in nineteen cases (3.13 per cent). In other words, a positive diagnosis was made of stone by Roentgen ray or cystoscopy, or both, in 587 (96.86 per cent). In the nineteen undiagnosed cases a negative Roentgen-ray report was given in six, no Roentgen-ray examination was made in thirteen, a negative cystoscopic examination was made in three, and no cystoscopic examination was made in sixteen.

The author reports 12 recurrences following litholapaxy, some after an interval of seven years. To guard against recurrence he advises that Roentgen-ray and cystoscopic examinations be made after litholapaxy to be sure that all fragments are removed.

Infected kidneys should be treated with pelvic lavage or nephrectomy if necessary, and focal infections removed.

If there are stones in the kidney they should be removed.

Cystitis should be relieved by lavage and topical applications.

Causes of retention such as prostate or stricture must be removed if possible, or, if these cannot be removed, as in the case of atonic bladder, the regular removal of residual urine should be practiced.

Diverticula, if they retain urine, should be removed. Hygienic and dietetic measures that benefit the general health should be adopted.

Bearing on the results of litholapaxy as compared with suprapubic cystostomy, the former procedure gave in a large number of cases studied 1.3-per-cent mortality as opposed to 8.6 per cent in the latter, and confined the patient to the hospital on an average of 4.2, compared with an average of 14.27 days. It is further noted that the success with which caudal anesthesia can be used in cases of vesical calculus greatly increases the scope of litholapaxy. Many patients with irritable bladders, nervous temperaments, large calculi, and so forth, who formerly would have required general anesthesia, and in consequence usually were cut, can now be cured by a very easy litholapaxy. It must be remembered, however, that the area affected by caudal anesthesia includes not only the urethra but the musculature of the bladder and lower ureter, and adequate instruments, such as some form of suction apparatus, are necessary in order to remove the fragments of stone from the bladder after crushing. Without caudal anesthesia it is easier to fill the bladder with water and allow contraction to force the fragments out through a tubular cystoscope. In females or in males with large urethras, large fragments of stone may be evacuated with ease through a Braasch cystoscope of 29 French caliber, consequently reducing the amount of crushing necessary. When only a few fragments so large that they will not pass through the cystoscope remain, these can often be reduced to the necessary diameter with a strong specimen-taker, thus obviating the necessity of reintroducing the lithotrite. One objection to a general anesthetic for lithotrity applies equally to a caudal anesthetic, namely, that in the absence of local sensation there is no intimation from the patient when the wall of the bladder is touched, and the operator must be doubly careful that the jaws of the lithotrite are free from the wall before tightening them.

Skin Eruptions from Gastrointestinal Disturbances.

RAVOGLI (*Urologic and Cutaneous Review,* March, 1923) notes that eruptions of gastrointestinal origin can be divided into two groups: (1) Eruptions produced directly by some peculiar elements inherent in the food, or from a process of fermentation caused by the indigestion of food substances in the gastrointestinal canal. (2) Eruptions resulting from disturbed metabolism.

According to John Philips Street food poisoning, which is believed to be very common, is of rather rare occurrence. According to Rosenau, food articles may be poisonous from bacteria, toxin decomposition products of protein, but the most common disturbances are the results of anaphylaxis. Food poisoning can be considered either as proceeding from food infection, or from food intoxication. The first is that which is produced by Gaertner's bacillus; it is usually called ptomaine poisoning, and is produced not only by infected meats, but at times also from milk, cheese, and vegetables. It occurs more often in warm weather, which favors the multiplication of the bacilli, and from flies carrying and spreading infection. Toxins are produced by the bacilli, and are remarkably virulent.

Fortunately these toxins, according to Van Ermengen, are destroyed by heating the tainted food to the temperature of 80° C. for thirty minutes, demonstrating that boiling offers a wide margin of safety. The best means of preventing production of bacilli with their toxins, affecting food substances, is by the system of refrigeration and cooking. Boiling the meat is the best method to make it soft and digestible; the boiling water penetrates into the fibers, reaching and destroying any bacilli or toxins which may have been there implanted. Rosenau states that in the vast majority of food infection the food is not noticeably altered in its appearance, taste, or smell. Bacilli belonging to the group of the Gaertner bacillus cannot be detected in food, milk, or water. Most of the outbreaks of food poisoning have occurred from meat pies, pork, ham, and beef; not frequently from eating fish, and very rarely from mutton or lamb.

The consequence of ingestion of poisonous or tainted food is a gastritis of catarrhal nature, with abundant secretion of mucus, eructation of gases and sometimes of liquids. Patients complain of thirst, pain in the stomach, burning sensation; vertigo is common in acute toxic indigestion, nausea, vomiting, sometimes coughing due to the irritation of the diaphragm from distention of the stomach. In some cases there is fever, and often the skin shows eruptions, of which the most common is: Urticaria, an eruption of the skin in form of wheals, pomphi, and is thus called because of its resemblance to the wheals provoked on the skin by the contact of the nettle, so-called nettle-rash. In some cases the whole body is affected with a small, whitish elevation on the skin, nearly coalescent; in other cases the pomphi are large, some as large as the palm of the hand, scattered in the different parts of the body, always accompanied by itching and burning sensation. When produced by tainted food or by acute indigestion, urticaria is often accompanied with fever, vertigo, vomiting.

Urticaria shows an irritability of the blood-vessels, which are subject at first to a constriction, then to a dilatation from disturbance of the vasomotor nerves. Sometimes urticaria is limited to a reaction of the skin to any slight irritation; rubbing with the finger-nails or with a pencil produces long streaks of urticaria—what was called dermographism, urticaria factitia. The pomphi remain for a few hours, then gradually disappear, leaving the skin normal. Only in the variety urticaria pigmentosa, on the place where the wheals have set, a pigmented spot remains.

Wright had already called attention to the exudation of the serum from the blood-

vessels into the tissues, which he finds to be subordinated to the coagulative quality of the serum and to the quantity of calcium salts therein contained. It has been noticed that some types of urticaria follow the ingestion of vegetables containing acids, which absorb calcium salts, as oxalic and citric acid. Kollert referred to cases in which urticaria followed the ingestion of sour apples, vinegar, formic acid. In a case of recurrent urticaria, in which the whole body was covered with urticaria wheals, Pulley found that the patient was a cigarette fiend. By chemical analysis it was found that the quantity of calcium salts was greatly diminished, and uric acid, sugar, and cholesterin markedly increased. The increase of uric acid would place urticaria in the line of those affections caused by acidosis.

Dermatitis exfoliativa is a disease *per se* of the type of erythema arising from disorders of the digestive organs.

For the proper treatment of these patients, it is necessary to study their gastrointestinal organs, find out the faults in the nutrition, their habits, judiciously regulate their diet, and use remedies capable of improving the catarrhal condition of the stomach and of the intestines.

Small doses of calomel gr. 1/5 with sod. bicarb. gr. v two or three times a day have given very good results, especially followed by saline purgatives. Calomel locally has a bland action on the mucous membranes of the stomach and intestines; it stops vomiting, it increases the secretion of the bile, and causes bilious stools.

In cases of persistent urticaria associated with intestinal troubles the administration of salol is useful. It is not soluble in the stomach, but it is dissolved in the intestines by the pancreatic juice, and the carbolic acid is set free, disinfecting the bowels. Externally a solution of carbolic acid (℥j) with glycerin (f℥j), rose water (f℥j), and alcohol (f℥j), applied to the skin twice a day, followed by a powdering with talcum and rice powder, has diminished the itching sensation and has given relief to the patients.

Diet has to be prescribed according to the habits and to the conditions of the patient. The use of tobacco has to be diminished, or entirely forbidden, especially chewing tobacco, which causes irritation of the stomach and of the intestines, resulting in vasomotor disturbances. Use of alkaline or saline mineral water, as Vichy, Tallewanda, has to be advised, until the gastrointestinal organs have returned to their normal condition.

Acute Suppurative Pleurisy.

Peck and Cave (*Surgery, Gynecology and Obstetrics*, March, 1923) base their paper upon an analysis of 94 cases of acute suppurative pleurisy treated at the Roosevelt Hospital from 1915-1920. Nearly all of these cases were secondary to pneumonia, either pneumococcic or streptococcic type.

In considering symptoms and signs, a delayed convalescence following pneumonia or influenza, with recrudescence or persistence of fever and signs of sepsis, should always suggest the possible development of empyema. The usual physical signs of fluid localized or general, confirmed by roentgenography, fluoroscopy, or aspiration, should soon establish a positive diagnosis.

Several cases of the localized and sacculated type presented interesting problems in diagnosis and treatment; two were high up beneath the left scapula, posteriorly; two presented multiple sacculations.

The treatment of empyema by drainage is one of the oldest operations of surgery. Many efforts have been made to simplify this procedure by substituting less radical treatment. A notable example is the formalin-glycerin injection method so strongly advocated by the late J. B. Murphy, which has failed to fulfil its early expectations as a substitute for drainage.

Simple aspiration, repeated, is valuable as a preoperative procedure, to tide over

critically ill cases to a period safer for radical operation; and in a small percentage of cases, especially in children, will effect a permanent cure in itself. They have had no cures in this series by aspiration *per se*, but have employed it as a preliminary to radical operation in several instances with excellent results.

The same may be said of the minor procedures of inserting small cannulæ or tubes through trocar wounds in the intercostal spaces, which they have done a few times. These less radical procedures are especially valuable in generalized empyema of the streptococcic or postinfluenzal types, in the early stages when constitutional symptoms are severe and the margin of safety is narrow. They are also useful in severe early cases of the pneumonic type, during the period when radical operation is perilous.

Rib resection was employed in 79 of the series, in the majority of cases using the eighth rib in the posterior axillary line.

A large firm rubber tube, three-fourths inch in diameter and about 6 to 8 inches long, projecting 1 to 2 inches into the pleural cavity, is anchored in position by suture. Gauze plugs on either side and careful suture of the wound angles tend to prevent sucking of air around the tube. The end of the tube is immediately clamped; a small split compress around the tube is at once strapped tightly to the chest wall with adhesive plaster carefully fitted, to complete the air-tight joint. A flange of rubber dam through which the tube passes may be used beneath the strapping to effect a more perfect closure. Gauze pads held by a binder complete the dressing. On return to the ward a long tube of smaller caliber, with its end submerged in solution in a large bottle on the floor at the side of the bed is attached to the large drainage tube by a tapered glass connection. Each inspiration tends to draw a column of fluid up in the tube producing a degree of negative pressure in the pleural cavity. Assuming that an air-tight joint has been secured, no air can enter the chest through or around the tube. Pus from the cavity flows into the bottle and settles at the bottom. Change of the fluid once or twice a day is sufficient, the tube being clamped each time. The amount of pus diminishes rapidly from day to day, and as a rule there is little or no soiling of the gauze dressing on the chest wall. The authors have repeatedly found it unnecessary to change it for a full week. Offensive pus-soaked dressings are practically eliminated by this method. If the attempt to secure an air-tight joint has failed, complete change of the dressing down to the chest wall and readjustment of the strapping will usually overcome the difficulty.

After the fourth or fifth day the patient is put on Wolff blow bottles, and encouraged to use deep breathing to expand the lung. At from seven to ten days the air-tight drainage has usually accomplished its purpose, the pleural adhesion to the chest wall has progressed to a point eliminating danger of lung collapse. The original tube is removed and replaced by one smaller, but still of good size; *e.g.*, one-half inch diameter, which is cut short and covered by fluff gauze. Within the next week the cavity has as a rule become a simple tube tract. Tubes progressively shorter and of smaller caliber are used until the tract is simply a thoracic wall sinus.

Throughout the treatment care must be taken to prevent unrecognized plugging of the tube or the formation of lateral pockets. In the later convalescence, balcony treatment, deep breathing and chest and arm exercises are insisted upon.

Eighteen of the 94 cases died in the hospital, a mortality of 19.1 per cent. Three deaths attributed to operative shock may well have been due to the existing pneumonia. Two died of pneumonia of the opposite lung; two of cerebral embolism. In nine death was attributed to sepsis and exhaustion, pneumonia probably being an important factor in some of this group. In two cases the cause of death was not stated.

Hemorrhage from intercostal vessels did

not occur in this series, but in a recent case, an elderly debilitated patient, death occurred from this cause nine days after operation, after removal of the drainage tube.

Of the remaining 76 cases, late results are known in 60 (76.3 per cent). Forty-nine cases healed completely, and have remained closed, the average time being 9.1 weeks.

In 11 cases secondary abscess required opening. One of these has been operated upon three times and still has a discharging sinus. Two of the secondary operations were done elsewhere.

The Use of Saline Solutions Intravenously.

Bayliss *(Lancet,* March 17, 1923) notes that in theory, of course, blood itself seems the obvious thing to replace blood which has been lost, except perhaps in traumatic shock without loss of blood, where the corpuscles are merely stationary in the capillaries until carried again into the effective blood-stream. But in any case blood is not always available at a moment's notice, and there are cases in which prompt action is of vital importance. Physiological saline (0.9-per-cent sodium chloride in water) was naturally the first solution to be tried. It was known to be innocuous, and had been found effective for isolated organs and for the preservation of blood corpuscles. But it was found useless for replacing lost blood in the whole organism. Measurements showed that it had disappeared from the circulation in twenty to thirty minutes or less. Why is this the case? Here we must consider osmotic pressure. Suppose that we have a bag of a material, such as parchment paper or collodion, which is pervious to water, but whose pores, although large enough to allow salts and sugar to pass through, are too small for the large particles of colloids, such as the proteins of the blood. Let us fill this sac with blood and immerse it in water. The salts soon pass through and becoming practically equal on both sides may be neglected for our present purpose. But the colloids remain inside. This difference between inside and outside in some way causes the attraction of water to the interior. The force of this attraction is proportional to the concentration of the colloids, and in normal blood is of the value of 35 to 40 mm. of mercury pressure. This is known as the osmotic pressure of the blood colloids. If we put pressure on the contents of the sac so as to try to force water out of the sac by filtration, none will escape until the pressure applied exceeds the opposing osmotic pressure of the contents of the sac.

The walls of the blood-vessels, in so far as we are concerned with their permeability, have properties like those of parchment paper and normally do not allow passage to colloids. Hence the conditions are present for these colloids to exert their osmotic properties of attracting water with a certain force. But in the arteries and the first part of the capillaries the blood-pressure is higher than this. There is accordingly filtration of fluid (lymph). As we proceed toward the veins, the blood-pressure diminishes and reaches a value below that of the osmotic pressure of the blood colloids. Reabsorption begins here and most of the previous filtrate is taken back again. What remains is carried to the thoracic duct by the lymphatic vessels.

We have seen that the value of the osmotic force is proportional to the concentration of the colloids in the blood. Hence, if we dilute the blood by the addition of a solution which contains no colloids, we reduce the force opposing filtration and the blood has also to travel further along the capillaries before the blood-pressure is reduced sufficiently to allow reabsorption. Both causes combine to produce an excessive filtration, which will continue until the blood returns to its normal osmotic pressure—that is, until the liquid injected has disappeared.

The obvious conclusion is that some colloid with an osmotic pressure equal to that of the blood colloids must be added to our injection solution. What are the colloids

which it is possible to use? Serum proteins from foreign sources cause hemolysis and anaphylaxis. Gelatin serves well, but is liable to contain tetanus spores and may cause trouble by setting to jelly in the tubes of the apparatus. On the other hand, gum arabic or acacia answers all requirements. It is quite innocuous, and in a concentration of 6.5 to 7 per cent in 0.9-per-cent sodium chloride has an osmotic pressure equal to that of the colloids of the blood. Its viscosity also is practically identical with that of the blood, although this is not of great importance. The salt is necessary because the blood corpuscles and tissue cells are impermeable to salts, hence their osmotic pressure must be balanced. Such solutions have in practice been found to cause a permanent increase in the volume of the blood. An essential point is that the gum must be good, in clear, nearly colorless lumps, such as is sold as "Turkey elect." Powdered samples seem to be adulterated.

Passing on to the conditions in which intravenous injection may be of value, we may call to mind the several ways in which the volume of the blood in actual circulation may be reduced: By actual hemorrhage from wounds or postpartum; by great loss of water from the intestine, as in cholera, infantile diarrhea, etc.; by dilatation of the capillaries and stasis therein as in traumatic shock. In operations, hemorrhage and shock may combine and gum saline should always be ready for use. It has been found of much value in this way at the Woman's Hospital in New York. It is rather remarkable that it has the property of restoring the renal function in blackwater fever, probably by raising the blood-pressure. After hemorrhage the rate of formation of new blood corpuscles is hastened. It is likely that this depends on a due supply of blood to the bone-marrow.

Certain objections have been made to gum saline. It is sometimes ineffective, as in severe traumatic shock. In this state the capillaries have become permeable even to the colloids of the blood, and transfusion of blood itself is useless, as was found in the casualty clearing stations in the war. Experiments on animals suggest, however, that repeated small doses may restore otherwise hopeless cases. When no blood has been lost, and the reduced volume is due to stasis in the capillaries, it would seem reasonable that a further supply of corpuscles is not needed, provided that those in a stationary condition can be washed into the circulation. So-called "chills" have been met with, but not more frequently than with blood or simple saline. Agglutination of corpuscles occurs in the cat, but does not appear to be present in man. It is harmless, even in the cat—a deposit of agglutinated corpuscles can be injected and is at once resuspended. There is no hemolysis.

Cancer of the Colon.

SULLIVAN *(American Journal of the Medical Sciences,* April, 1923) contributes a clinical study and case reports and thus discusses treatment:

For a long time the treatment of cancer of the colon remained palliative, in the form of an artificial anus, for the relief of obstruction, the most common complication of these cases. The remarkable advance of abdominal surgery in general, and the improved technique of intestinal operations in particular, led to resection, in one stage, of the tumor as well as of the affected glands; but the imperfect results soon showed the necessity of two-stage or three-stage operations, which were almost exclusively utilized until a further and almost phenomenal development of operative technique permitted the resumption of radical treatment in one stage. However, although less brilliant for the surgeon and involving the inconvenience of a temporary artificial anus for the patient, two- or three-stage operations are undoubtedly safer and for this reason preferable in the great majority of cases.

Colectomy in one stage aims at extensive resection of the tumor-bearing segment and its mesentery, which, after liberation from adhesions and mobilization of the colonic segment, are removed like a sac with the

septic contents. The resection is immediately followed by an end-to-end or side-to-side anastomosis. One-stage colectomy, according to Boyer, is the operation of choice on the right side, whereas two-stage or three-stage operations are indicated on the left segment of the colon. The one-stage colectomy is definitely contraindicated in all cases complicated by intestinal obstruction.

The greatest cause of failure, after primary or secondary one-stage colectomy, is peritonitis. This is due: (1) to the extreme sepsis of the intestinal contents; (2) to the exposure to infection of the raw surfaces created by the detachment of the colonic wall; (3) to some extent, to the technical difficulty of suture application, as well as to the endangerment of the sutures by the passage of hard scybala; and (4) to the peculiarities of the local blood supply.

The adherents of one-stage colectomy consider the cancer to be operable during the entire period of latency, which may extend for from several months to three years, before clinical manifestations occur. The surgical indications for radical interference are therefore governed by a careful anatomical and clinical study of the syndrome. One-stage colectomy often becomes the treatment of choice during the period of tolerance, so that the essential point really is the determination of the most suitable time for the operation. But the clinical findings as a rule furnish only more or less indefinite operative indications during the entire period of latency, and an incipient cancer can be revealed only through exploratory laparotomy. This should be performed before the onset of intestinal obstruction, as soon as the patient seeks advice for obstinate constipation, which is accompanied by loss of weight and abdominal pain, alternating with attacks of diarrhea. The greater number of patients come under observation with long-standing cancer and stricture, and when first seen are in a state of chronic obstruction or occlusion. In these circumstances two-stage colectomy is distinctly and necessarily indicated. One-stage colectomy, while undoubtedly the ideal procedure, depends for its justification on a timely diagnosis, the essential condition for a safe, rational and radical operation for malignant conditions of the colon.

Cancer of the pelvic colon may be treated by several operative procedures, namely, resection of the tumor; reëstablishment of the passage, and suture of the abdominal wall in one stage; resection of the cancerous segment with suture of the afferent and efferent ends into the abdominal wound in another stage, followed later by closure of the resulting artificial anus in the third stage. According to Schwartz, in Paris, the latter method in three stages is the procedure of choice. The only indication for operation in one stage is an excellent condition of the intestine, which guarantees good anastomosis, but this condition is very uncommon. In all cases in which the gut can be mobilized, it should be exposed; only when this is not practicable may resection be performed at once, with or sometimes without fixation of the two ends in the wound. In order that healthy tissue may be operated on at the second stage, it is of course necessary to mobilize and extensively displace not only the tumor, but also the mesocolon, so as to prevent the tumor from being drawn back into the abdominal cavity by the intestinal mass.

From the operative view-point the sigmoid flexure of the colon presents a segment of bowel extremely well adapted to resection. Being a long organ with a well-developed mesentery, which can be drawn out of the abdominal cavity, it offers all the conditions required for surgical interference under favorable prospects. The essential point is the timely recognition of the cancer in this region, before the occurrence of obstruction, adhesions, and glandular involvement. The extirpation of the cancer in one stage is entirely feasible, and under these conditions has a fairly low operative mortality.

The principles which may be considered in the basic technique of the one-stage removal of these cancers are: (1) Adequate abdominal incisions; (2) proper mobiliza-

tion of the diseased segment to insure a serviceable anastomosis without tension; (3) preservation of adequate blood supply to the distal segment; and (4) formation of an efficient end-to-end or lateral anastomosis. However, since experience shows that these cases seldom come to operation early, the two-stage or three-stage operation is the one of choice.

X-rays in the Treatment of Fibroids.

RIDDELL (*Glasgow Medical Journal*, March, 1923) records it as his belief that the first successful treatment of a fibroid by the *x*-rays was by J. E. Hett, of Ontario, and reported in 1904. The tumor was a large one, of twelve years' growth, of the intramural multilocular type. His results were entirely successful both in regard to the hemorrhage and the disappearance of the tumor. Only recently has it been realized how important is the part played by secondary radiations in producing effects deep in the tissues, and physicists have turned their attention to the subject with results that have revolutionized our technique and greatly extended the field of usefulness for radiotherapy. In the matter of technique there has been a steady development, a development due to increased knowledge of the action of Roentgen rays, to greater experience in their administration, and to improvement in the apparatus. The physicists insist that only those rays which are absorbed in a tissue can have any action on it. Therefore, rays of moderate penetration were employed, and light filters consisting of leather or about 1 mm. of aluminum, in order to cut out only the very soft rays. With this technique much valuable work has been done, and many successful cases, amounting to thousands, have been reported.

Riddell now adopts and finds most efficient the following method:

Rays of high penetration are used (equal to nine-inch equivalent spark) and a filter of 4 mm. of aluminum. Two ports of entry are taken, one over the hypogastrium and one over the sacrum. Four doses are given, of twenty minutes each, on consecutive days, two in front and two behind. This is repeated at intervals of three weeks. Usually four series are required, occasionally a fifth may be necessary. By this method the entire treatment usually requires about two months; at the most it takes four. It does not upset the patient in any way; it does not interfere with her daily occupation; its results are excellent.

One other method remains to be described. The importance of secondary radiations produced in the tissues by means of the primary beam from the *x*-ray tube is well recognized. It is found that these become more abundant when the primary beam has a high penetrating power. Acting on this fact, apparatus has been produced to give rays of very great penetration—resembling the gamma rays of radium; all the soft rays are cut off by using a dense filter such as 0.5 mm. zinc or copper. It is the employment of these rays that has produced such surprising results, and so widened the field of radiotherapy.

On the biological side advance has been made along the lines of determining just what doses are necessary to destroy the diseased cells of a tissue, without destroying those that are healthy, and this has been determined in relation to the full dose that the skin will tolerate, which is taken as 100 per cent. It is insisted on that this dose must be given at one sitting, otherwise the abnormal tissues will get time to react in their own defense. What has been called the "castration dose"—the dose which concerns us in the treatment of fibroids and uterine hemorrhage—is 34 per cent of the unit skin dose; that is to say, that if all the ovarian tissue receives 34 per cent of the standard dose the menopause will follow and shrinkage of any fibroma present will occur. In an average woman the time necessary to give the castration dose by this method is about two hours.

The question of the safety of the skin and other tissues—such as underlying muscle, bladder, and bowel—is an important one. Fortunately, the deeper structures—bowel, muscle, bladder, etc.—are less "ra-

dio-sensitive" than skin; *e. g.,* it takes 135 per cent to damage bowel and 180 per cent to damage muscle, so that in the treatment of fibroids the problem is in reality reduced to safeguarding the skin.

Dr. Beclere had treated close on 500 patients, but as a number of them were of recent date, he based his report on the first 400. Their ages ranged from thirty to fifty-five years. The symptoms were hemorrhage, tumor, pressure—especially on the bladder—and anemia.

In 62 of the 400 the tumor did not rise above the symphysis; in the other 338 it did, and was palpable through the abdominal wall. In 300 the tumor was more than 2 inches above the pubis. In nearly 200 it was more than 4 inches above the pubis. In 9 cases it was more than 10 inches up from the pubic bone. Sixty per cent were well within three months. On only four occasions was it necessary to resort to surgical interference, and that on account of the profuseness of the hemorrhage. In the majority, menstruation appeared twice after commencing the treatment, and then was suppressed. In 12 per cent periods returned after having ceased for some months, to disappear again on further raying. In 2 per cent a second return took place, but all finally disappeared on further raying.

The treatment is successful in arresting the hemorrhage associated with senile changes in the uterus, and in the relief of dysmenorrhea.

Heliotherapy in Infectious Diseases of the Bones and Joints.

GEIST *(Minnesota Medicine,* April, 1923) observes that one must be somewhat careful in the application of sunlight and not rush matters too much in the beginning. The point is to achieve a tan and not a burn. Blondes do not tan as readily as brunettes, and in blondes one must be more careful in the gradual application of sunlight. The patient's eyes and head must be protected; no exposure should take place soon after meals.

It will be found that the older the patient, the easier he or she will become tired. One should be careful to guard against exhaustion and increase of temperature. The fact that the patient had a temperature before beginning heliotherapy is no reason for not using this method. However, a distinct rise of temperature following irradiation is usually a sign that exposure has been too long. Draughts should be avoided and the patient should be kept out of the wind.

The degree of attention which the patient has paid to his treatment is registered by the amount of tanning present, and as a rule the degree of improvement in tuberculous and non-tuberculous infections can also almost be measured by the same degree of tanning.

In the winter months and on days when the sun does not shine, a quartz lamp promises to be a fairly satisfactory substitute.

Tuberculosis of the bones and joints, of course, presents the largest field for the use of this therapeutic agent. It may be said that the treatment of the bone and joint tuberculosis has been revolutionized by Rollier and his followers. Orthopedic appliances from now on must be more or less removable, so that the rays of the sun can reach the patient's skin, especially over the affected regions. More extension and rest must be used than heretofore.

In children the method can be easily used when an intelligent mother is in attendance. In adults the element of time often enters, and it is probable that operations, such as resection of joints, will always retain their practicability.

The application of sunlight to these tuberculous patients immediately increases the appetite and a gain in weight is noted. Within a few weeks freedom from pain and a general condition of well-being and cheerfulness has established itself. The patient becomes accustomed to his new environment and sleeps and feels well. Fistulæ usually close, sometimes with surprising rapidity. Deformities often disappear, especially in the young.

By means of heliotherapy, tuberculous joints may frequently "heal out" with

painless motion. It is, of course, difficult to tell when complete healing has taken place. We may speak of cure in a tuberculous joint when the joint is painless and is strong enough to perform its function in a satisfactory manner, no matter whether it be ankylotic or movable.

In all forms of chronic suppuration, healing can be hastened in most cases by a matter of weeks.

Geist states that the patients who nowadays arrive at his office suffering with chronic arthritis come sans teeth, sans tonsils, and often minus a few other organs. (It is, of course, necessary in these cases to remove all possible foci of infection when present.) Each case must be studied for itself. Some of these cases suffer because of focal infection; some because of gastrointestinal disturbance; in some there is a neurological basis.

Patients suffering from chronic arthritis are willing to grasp at a straw. Sunlight is cheap and not harmful. It is usually easily available and can be easily applied.

After the acute stage of gonorrheal arthritis the application of heliotherapy is followed by good results.

In addition to the usual antirachitic treatment, we have, in heliotherapy, a valuable adjunct in the treatment of this disease.

The author finishes his paper with the statement that there are a number of other chronic infections, besides tuberculosis, which are advantageously affected by the rays of the sun when properly used.

A New Operation for Femoral Hernia.

Under this title ANDREWS *(Illinois Medical Journal,* April, 1923) describes his method of procedure as follows:

The skin incision begins over the external inguinal ring and extends about 6 cm. upward and outward, parallel to and about 2 cm. above Poupart's ligament. The external oblique aponeurosis is exposed and its fibers split upward from the ring for a distance of ¾ cm. This splitting should begin at the margin of the ring farthest from Poupart's, leaving a strip of the aponeurosis about 2 cm. wide attached to Poupart's. The internal oblique is now separated by blunt dissection and, together with the spermatic cord or round ligament, retracted upward. The transversalis fascia, rather thin at this point, is torn through, and the neck of the sac exposed. The sac is pulled out of the canal, emptied, and excised according to the method described by Moschowitz. (In certain cases the sac will already have been removed from below.) A few sweeps of the sponge will now clear out the upper end of the femoral canal, and a single deep abdominal retractor placed in the upper side maintains adequate exposure. A deep space is left. It is bounded above by the internal oblique muscle superficially and the peritoneum more deeply. Both are held by the retractor. Below is the pubic bone, and more superficially, Poupart's ligament with Gimbernat's ligament joining the two in the mesial part. Laterally lies the external iliac vein, with the deep epigastric vessels just above it. Care must be taken in cleaning out this space not to injure an anomalous obturator artery, which sometimes arises from the deep epigastric, in which case it runs right across the field.

The lower fragment of the external oblique aponeurosis is now turned inward into this space and attached to the periosteum of the pubic bone just above the pectineal line. Two or three silk sutures are necessary, the innermost next to Gimbernat's, and the outer close to the external iliac vein. This produces a firm closure of the upper end of the femoral canal with a strong durable membrane. The floor of the inguinal canal is now closed. One kangaroo tendon stitch in the conjoined tendon, surrounding Poupart's and going under the cord or round ligament, is usually enough. Next, the upper fragment of the external oblique is sewed to Poupart's with a running stitch, care being taken that each stitch includes not only the turned-in lower fragment but a part of Poupart's as well. The skin is closed with clips.

The advantages of this method are as follows:

1. The closure of the canal is made at the upper end, leaving no pouch.

2. A stronger membrane is used than in any other operation.

3. The rigid and inelastic walls of the ring are not used, but instead structures that can be sewn together without the slightest tension. The latter is the most important factor and is a drawback to all operations which lift the pectineal fascia or Cooper's ligament and oppose it to Poupart's.

It is not applicable or needed as a routine measure, but in difficult cases it makes a stronger repair than any of the methods in vogue.

Early High Amputation in Senile Gangrene of the Lower Extremity.

GILLIAM *(Ohio State Medical Journal,* April 1, 1923) reports cases to prove his contention that prompt and high amputation is the appropriate treatment in cases of senile gangrene. He notes that this affection is more common in men than in women, and that before the actual death of the parts there is a period during which there is a condition of numbness, loss of sensation, inability to keep the parts warm, and cramps in the muscles.

Gilliam states that during the last three years he had seven of these cases of senile gangrene under his care. Four submitted to operative treatment, three refused. The operative cases submitted to limited measures. One has had four different amputations at higher levels; two have been operated on twice; one but once, since his condition was so bad as not to warrant further surgical interference.

A great many of these cases of gangrene occur in persons of the laboring class, and it is essential that they be restored to their positions in the minimum of time, and with the least possible loss of tissue. The advancement of the morbid process is often so slow and insidious that it leaves one in a quandary whether to advise immediate high amputation, or to delay in hopes that more of the member may be saved. On the other hand, should we be content to amputate a toe or part of a foot without advising an amputation higher up, when we know it will only be a matter of time until a secondary operation will be necessary?

Bearing on senile gangrene Murphy formulates the following rules:

1. In gangrene of the toe the line of demarcation should be complete, clean-cut, and advanced before amputation, which should be an exarticulation of the metatarsophalangeal joint.

2. When the sole of the foot or plantar fascia becomes involved, do not wait for demarcation, but amputate through the lower third of the leg immediately. If a line of demarcation is waited for in plantar infection the patient usually succumbs to sepsis and exhaustion.

3. If the gangrene involves the lower half of the foot, do not wait for the line of demarcation, but amputate at once at the lower third of the leg.

All surgeons agree that a high amputation is to be preferred, and the knee or the thigh is usually selected because the profunda femoris is rarely obstructed by thrombi. When amputation is determined upon, the anatomical distribution of the vascular supply of the part must clearly be borne in mind and an effort made to have in the flap not only unobstructed vessels, if arteriosclerosis or thrombosis be present, but also a sufficient supply to insure proper nutrition. We possess no known means of establishing at what level the vessels of the leg are in a healthy state—that is, where to amputate. In order to determine the state of the vessels, Sajous recommends that the affected leg be rendered bloodless by means of an Esmarch bandage, and that the bandage then be suddenly removed. In a healthy leg the sudden removal of this sort is followed by an active red hyperemia extending to the tip of the toes, whereas if the vessels are diseased the hyperemia occurs more slowly and usually extends only as far as that point where the vessels are in good

condition. Ochsner, in the Practical Medicine Series for 1920, states that the tendency of the majority of surgeons, in selecting the level at which to amputate in senile gangrene, is to be guided by the extent of the area of gangrene. Not infrequently the amputation is followed by extensive sloughing of the flaps, and either death follows from sepsis, or the opposite limb becomes involved by extension of the thrombosis from the femoral to the iliac and then across to the opposite iliac artery.

Reviews

EPIDEMIOLOGY AND PUBLIC HEALTH. A Text and Reference Book for Physicians, Medical Students, and Health Workers. Three Volumes. By Victor C. Vaughan, M.D., LL.D., assisted by Henry F. Vaughan, M.S., D.P.H., and George T. Palmer, M.S., D.P.H. Volumes I and II. The C. V. Moseby Company, St. Louis, 1923. Price $9 each.

In the opening pages of Volume I of this very notable contribution to medical literature in general and to epidemiology in particular, Dr. Vaughan points out, what we are prone to forget, that the last fifty years have marked the most remarkable advance in sanitation and in the control of infectious disease. As the reader goes over the pages he says to himself: "I knew all that years ago, but I had forgotten the shocking state of affairs that existed when I was a lad."

In these times one cannot avoid wondering how we, and our forebears, ever survived such exposure to disease. Aside from its preliminary remarks, Volume I deals with most of the common eruptive fevers, with so-called pollinosis, tuberculosis, glanders, poliomyelitis, and cerebrospinal meningitis. It also has a chapter devoted to albuminal or protein diseases. The final pages discuss "Weather and Disease," a theme of great interest about which we know far too little.

Volume I contains no less than 83 illustrations.

The second volume deals with nutritional disorders, alimentary infections, and percutaneous infections, and, therefore, deals with a most important field in medicine. There are 53 illustrations. A very large number deal with typhoid fever.

In one sense the work may be considered as a Practice of Medicine devoting itself almost entirely to etiology and pathology. Needless to say it is exhaustive, and also of necessity it deals not only with the views of the writers, but with reports made by those who have had opportunities for observing diseases in tropical or subtropical areas. Thus in the article upon Sprue, several pages are taken up with a quotation from Hillary, whose book upon observations made in the Island of Barbadoes in 1752 gives a description of this disease which the authors think is noteworthy.

The text of Volume II also deals with Asiatic cholera, dysenteries and diarrheas, and the various types of infections by protozoa. A classification is followed which is unusual, in that anthrax, rat-bite fever, and snake-bite occur at the end of the volume, as does also typhus, relapsing fever, and plague, whereas typhoid fever, goitre, cretinism and food poisoning occur on the opening pages. This volume contains 53 illustrations.

A work so large as to be published in three volumes and, therefore, covering between 2000 and 3000 pages can scarcely be used or recommended as a text-book for students or for the general practitioner, but for health officers, teachers of medicine, and all those who are interested in the prevention of disease (and after all who is not?), this putting together of much valuable information can be most highly recommended.

THE UNITED FRUIT COMPANY. Medical Department. Eleventh Annual Report for 1922, Boston, Mass.

It is not our custom to review the reports made by commercial companies, but this is one which certainly deserves recognition,

as will be manifest when we state that it covers 147 pages of medical facts. It is printed on excellent paper and contains an amount of statistical information in regard to tropical and subtropical diseases which more closely resembles a publication of one of the departments of the government in Washington than that of a private corporation. No person interested in the incidence of disease in the tropics and subtropics and no one who may chance to write upon such subjects can afford to ignore these annual reports of the United Fruit Company.

The reader may be reminded that the area controlled by this company is 2700 square miles, whereas the Canal Zone is less than 500 square miles; Rhode Island 1248 square miles, and Delaware 2390 square miles. It has on its pay-roll 67,000 employees, operates 1400 miles of railway, 600 miles of tramway, and 3500 miles of telegraph and telephone lines.

It is not surprising therefore that the medical department is doing an enormous amount of work.

In this report we find practical clinical observations made upon the treatment of hookworm and malaria as well as almost all diseases to which human beings are susceptible. The report is noteworthy not only because it is a most excellent contribution to preventive medicine, bedside medicine, and public health, but also because any company that is willing to provide such excellent facilities for the care of its employees, and then to provide the world at large with such an expensive and adequate report, deserves the laudation not only of the medical profession, but of the public in general.

THE INFANT AND YOUNG CHILD. By John Lovett Morse, M.D., Edwin T. Wyman, M.D., and Louis Webb Hill, M.D. The W. B. Saunders Company, Philadelphia, 1923. Price $1.75.

All the authors of this book, which is printed in large type and well leaded, are connected with the Department of Pediatrics at the Harvard Medical School. It deals with the care and feeding of the infant and young child from birth until school age, and is definitely designed as a manual for mothers. As such it admirably fills the purpose for which it is intended. Without attempting to provide the reader with a good deal of information which is far beyond her needs or capabilities of understanding it gives good sensible advice both for the healthy and ailing child.

Under the head of Religious Education, we find that the authors are bold enough to deal with this theme, stating that children should go to Sunday-school at least as early as to other schools, and to church as soon as they can keep still long enough at one time. This interesting sentence is interpolated at this point: "Strange as it may seem to some, it apparently makes no difference in the severity of whooping-cough, measles and other contagious diseases whether they are contracted at Sunday-school or elsewhere." The authors also think that children should be told Bible stories at home and should be at least as well acquainted with Moses, Isaac and Jacob as with Jack the Giant Killer and Puss and Boots, by which sentence it is apparent that neither Christian nor Jew can be offended by the religious tendencies of the authors. It is only fair to state, however, that less than a page in the book is devoted to this subject.

THE INTERNATIONAL MEDICAL ANNUAL. A Year-book of Treatment and Practitioners' Index. William Wood & Company, New York, 1923. Price $5.

This is the forty-first year that the International Medical Annual has appeared. Nearly all of the contributors are British, which is natural, since it is in reality a British publication. Amongst the American contributors we find J. Ramsay Hunt, who deals with Diseases of the Nervous System, and Loring T. Swaim, who discusses Postural Treatment. Amongst the British contributors we note such well-known names as Lockhart-Mummery, Robert Hutchison, and Sir Leonard Rogers. The volume is designed, as our readers probably know, to present a summary of medical literature. We note with interest that Hutchison in writing about the Meltzer-Lyon method of draining the biliary pas-

sages, makes the statement that it is not much used in England as yet, although Meakins of Edinburgh has described his experience with it in a paper which forms the basis of Hutchison's summary. Hutchison believes that Lyon deserves much credit from the profession for his investigations.

THE MEDICAL CLINICS OF NORTH AMERICA, May, 1923. The W. B. Saunders Company, Philadelphia, 1923.

This, Volume VI, No. 6, of the Medical Clinics of North America, is the San Francisco number, and although dated May has just appeared. It also contains the index to Volume VI.

An unusually large number of teachers contribute to it. William F. Cheney gives the opening clinic upon Gall-stones, and Marshall F. Cheney gives another upon The Technique of Stool Examination. There are other articles upon The Radium Treatment of Carcinoma of the Lip, Unusual Types of Severe Anemia, on Cardiac Neuroses, and one by Lucas upon The Diagnosis and Treatment of Pyloric Stenosis. Large type and wide spacing make the text readily readable.

PRACTICAL LOCAL ANESTHESIA AND ITS SURGICAL TECHNIC. By Robert Farr, M.D., F.A.C.S. Illustrated. Lea & Febiger, Philadelphia and New York, 1923.

This book, aptly dedicated "To that unfortunate individual The Patient who, Fate has decreed, must undergo surgical treatment," "is an expression of the author's views on the subject of local anesthesia as developed by his observation and by his own experience. Its aim is to present to the medical profession the advantages of local anesthesia to patient and to surgeon, and to describe the practical details of methods of administration and of operative technic employed in its use."

The first portion of the book, containing six chapters, is devoted to Local Anesthesia and sets forth in adequate detail the equipment, the method employed, and the anatomy of the central nervous system. The second part, containing twelve chapters, deals with Anesthesia from the Regional Standpoint. The third part is devoted entirely to Local Anesthesia as Applied to Surgery of the Abdomen.

There have been incorporated in the text certain operative details which the author regards as needful to the proper performance of the operation under local anesthesia.

In the Foreword Dr. Lewis L. McArthur states that Dr. Farr has studied the problem from every conceivable angle; has used every beneficial influence; and that his phenomenal and gratifying success may be duplicated by any one willing to profit by his experiences.

Since local anesthesia is the method of the future it behooves all surgeons, and particularly those just starting on their professional career, to become thoroughly familiar with its underlying principles, to acquire the anatomic and other knowledge needful for the application of these principles, to secure an armamentarium adequate to the obtaining of the desired result, to acquire a gentle and time-saving technique which can be perfected only by practice.

In this book will be found all the knowledge needful to equip a surgeon to become a skilful local anesthetizer, excepting that which must be gained in the operating room, based as it must be on practical experience and a belief in the method. General anesthesia is the present method of popular choice, not because it is the best method, but because surgeons and their assistants are not familiar with one which is better. Perhaps not even the most rabid enthusiast will hold now or in the future that all cases must be operated upon by the local method of obtunding pain. That practically all surgical procedures are possible and without pain by local anesthesia is well proven, but there are many conditions which will make the application of this method difficult, abortive, or impossible.

With this book as a guide any surgeon may so train himself and his assistants that a general anesthetic will be the exception

rather than the rule. Nor can it be doubted that under such training end results will be better than they were before.

In his arraignment of general anesthesia the author quotes Connell to the effect that since the extensive introduction of nitrous oxide oxygen into general surgery the reported and unreported deaths have probably far exceeded those from ether. He also alludes to the fact that under General Anesthesia the tissue trauma is greater than that inflicted when the patient is conscious. Bearing on the mortality figures of general anesthesia he quotes W. Hamilton Long to the effect that "Figures don't lie, but liars will figure." Bearing on preliminary narcotics, Farr states that "preliminary medication, whether safe or harmful, if given for the purpose of obtunding pain which is to be experienced by the patient because the surgeon has failed properly to block with local anesthesia, is reprehensible in the extreme, and should be so considered by those who essay the use of the method at all. *This* point cannot be too clearly understood nor too strongly emphasized. He who cannot do an operation painlessly under local anesthesia alone should not hide behind the veil of the preliminary narcotic. As a preventive measure against psychic shock the preliminary hypodermic may be indicated, but for the prevention of pain it should have no place."

Concerning the general practitioner the author advises that he should be familiar with the methods of producing local anesthesia that he may more efficiently reduce dislocations, suture lacerated wounds, drain abscesses, and perform many minor operations.

The term "Psycho-local Anesthesia" is applied to the method of introducing local anesthesia and making the patient think he is taking a general anesthetic. With the patient whose complaint is out of proportion to real suffering this is at times efficient and desirable.

The author particularly stresses the need of special equipment and illustrates his table, his syringes, and his pneumatic injector; the latter he states more than all other items of equipment has, by reducing to a minimum the labor, inconvenience and time and margin of error, made the use of local anesthesia a delight. The operative room lighting, the automatic wire spring retractors and the automatic lifter, the prostatic retractor, the viscera retainer, the rubber-tipped intestinal forceps and other instruments are illustrated and described.

The book is abundantly and excellently illustrated. It is to be hoped that it will prove a powerful stimulus to popularizing these anesthetic methods which have proven themselves entirely efficient and entirely safe.

THE URETHRA AND THE URETHROSCOPE. By F. Carminow Doble, M.R.C.S., L.R.C.P. Lond. Henry Frowde and Hodder and Stoughton, London, 1923. Oxford University Press, New York, 1923.

This book is designed to act as an instructor to those surgeons so placed or environed that they cannot procure the practical experience with cystoscopes which is given in large clinics. The more determined of this group, if in their clientele is a sufficient number of patients willing to submit to the first awkward, painful and futile examinations, acquire a certain degree of diagnostic ability. Doble has assembled his text with the object of preventing the suffering entailed by this self-education and to help the surgeon in more quickly attaining his object—*i. e.*, wise choice of instruments, then proper and gentle introduction, the interpretation of the findings, and the administering of appropriate treatment.

It is possible that his choice of instruments will not be approved by those of large experience, but for that matter there could be no selection free from individual criticism. His descriptions of methods of use and the therapeutic indications for the employment of these instruments are excellent. He even exhibits some enthusiasm over catheterization of the ejaculatory ducts, holding rightly that the instrument introduced through them will enter the seminal vesicles and that the latter thus can be irrigated and drained. Metal bougies are used instead of semirigid catheters.